ENGINEERING NEWS-RECORD

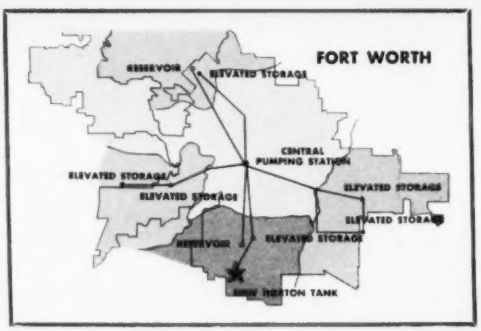
A McGRAW-HILL PUBLICATION

What this 2,000,000 gallon Horton Water Tank means to thousands of Texas families

Dependable water service twenty-four hours a day has been extended to thousands of Fort Worth, Texas, families since the recent installation of this Horton elevated water tank.

Like many modern cities, Fort Worth utilizes distributed elevated water storage to better serve a quarter million people throughout a metropolitan area of 73 square miles. The 2,000,000-gallon Horton tank shown above is installed in the southern part of the city to help increase water pressure at peak load periods, reduce pressure variations, and provide a ready supply of water for emergencies. It has a radial-cone bottom to help lower pumping costs by reducing the range in head between upper and lower water levels.

Horton tanks with radial-cone bottoms are built in capacities ranging from 500,000 to 3,000,000 gallons. Write our nearest office if you are planning a new or improved water system.



This map of Fort Worth, Texas, illustrates five pressure planes in its water distribution system. Each is in reality a separate water system with storage and mains. The unifying factor is the central pumping station which supplies water to all five districts. The star designates location of the Horton tank pictured above.

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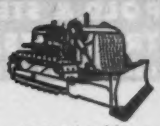

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ABP Member ABC

Volume 147 — OCTOBER 18, 1951 — No. 16

WALDO G. BOWMAN
Editor

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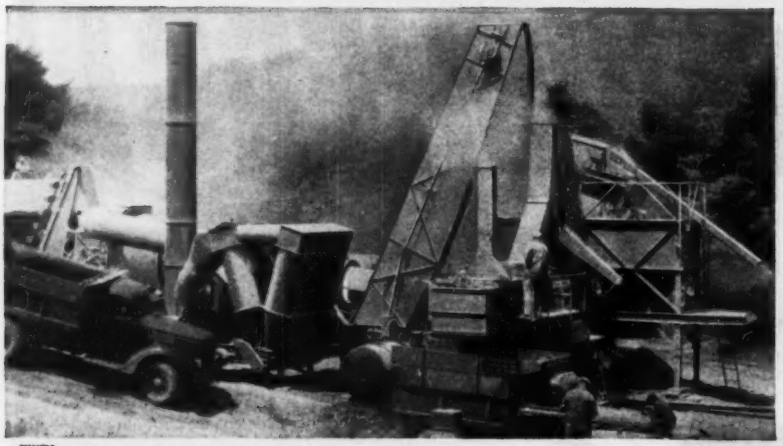

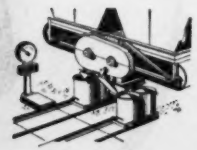

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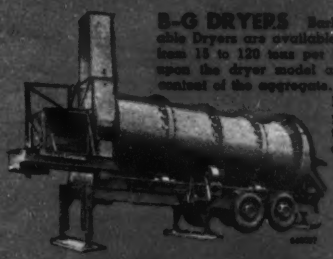

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209

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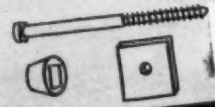

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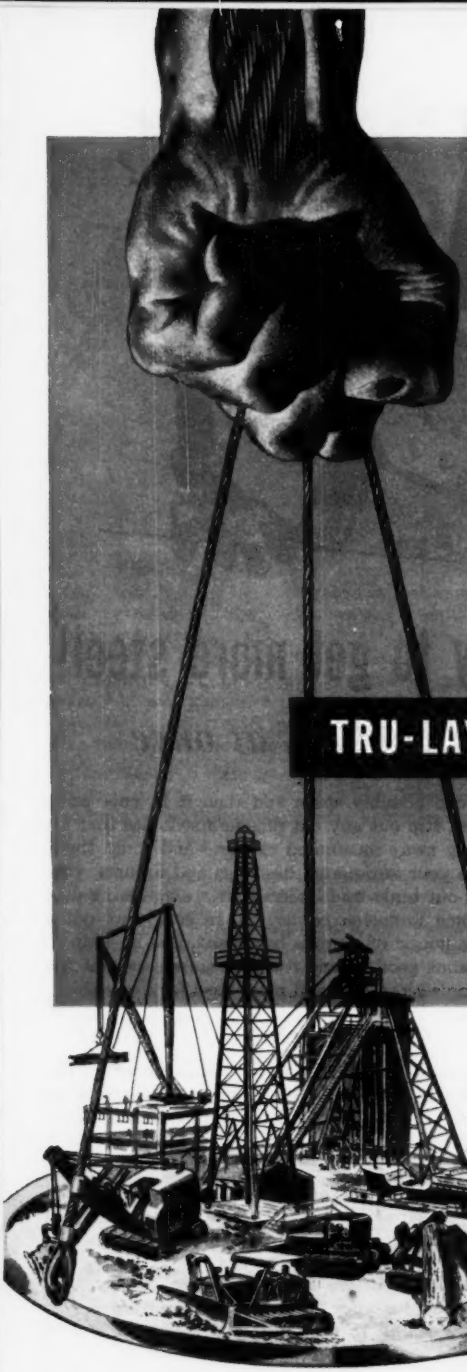

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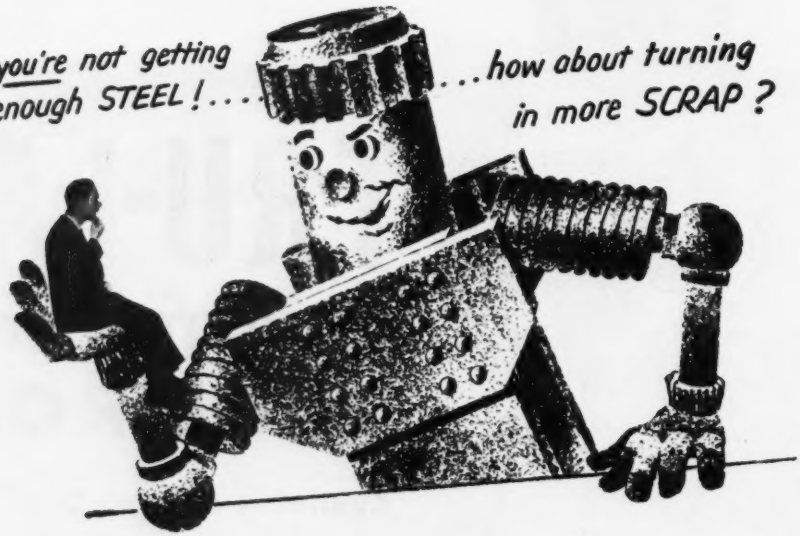

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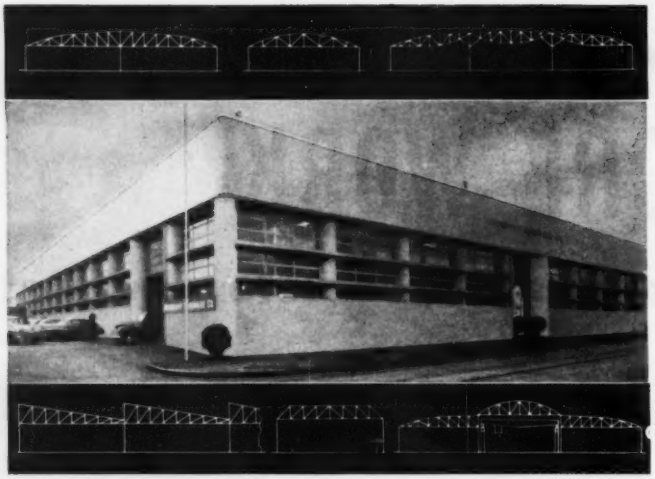

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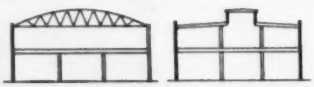

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NEWS BRIEFS

• **Revenue-producing dams** – Repayment to the U. S. Treasury for the power investment in both Grand Coulee and Bonneville is well ahead of schedule, Bonneville Power Administrator Paul J. Raver has reported. On Bonneville Dam, repayment to date of $38,163,000 has allowed return of $16,836,000 on the capital investment allocated to power, 28 percent of the total. Only seven years of the 50-year payout period have expired. At Grand Coulee, repayments of capital investment to the Columbia Basin project total about $23,300,000, almost three times as much as the payment scheduled for this time, $8,009,000. Excellent water conditions on the Columbia River for the fiscal year ended June 30 boosted Bonneville Power Administration gross annual revenues to more than $36,000,000, an increase of nearly $5,000,000 over the previous year. Net revenues for the year were about $14,500,000, up from $12,000,000.

• **Inland job for ocean dredge**—Far from the ocean and high in the mountains, a 36-ton ocean dredge is cleaning out the millpond of Southwest Lumber Co., at McNary, Ariz. With a year's work ahead, the dredge cleaned out 12,000 cu yd of muck during its first 12 days of operation and brought to the surface 160,000 board ft of sinkers—logs which had become waterfilled and sunk. These logs are sawed into ties for the company's railroad. The dredge is owned by Shellmaker, Inc., California. It was shipped to McNary by train.

• **Cement checks bacteria**—A cement treatment that checks the growth of bacteria and fungus on the floors and walls of dairies, school gymnasiums, locker and shower rooms, restaurant kitchens and chemical plants is reported to be satisfactory after nine years of testing. Anti-bacterial cement developed by William J. Knapp of the University of California and Charles R. Amberg at the N. Y. State College of Ceramics, Alfred, N. Y., carries seven-tenths of one percent of pentachlorophenol, a fungicide.

• **Civil defense airstrip—The Civil** Aeronautics Authority has granted permission for the construction in Evanston, Ill., of an emergency civil defense airstrip, which is to be used only as a disaster landing area and as a practice site for the civil air patrol. This project was undertaken jointly by Evans-

(*Continued on page 13*)

WHEREVER ENGINES WORK

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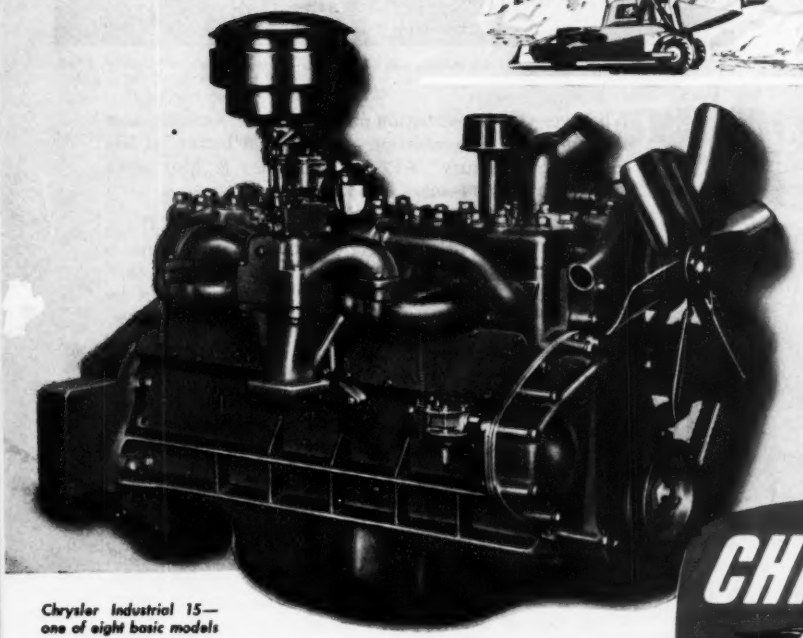


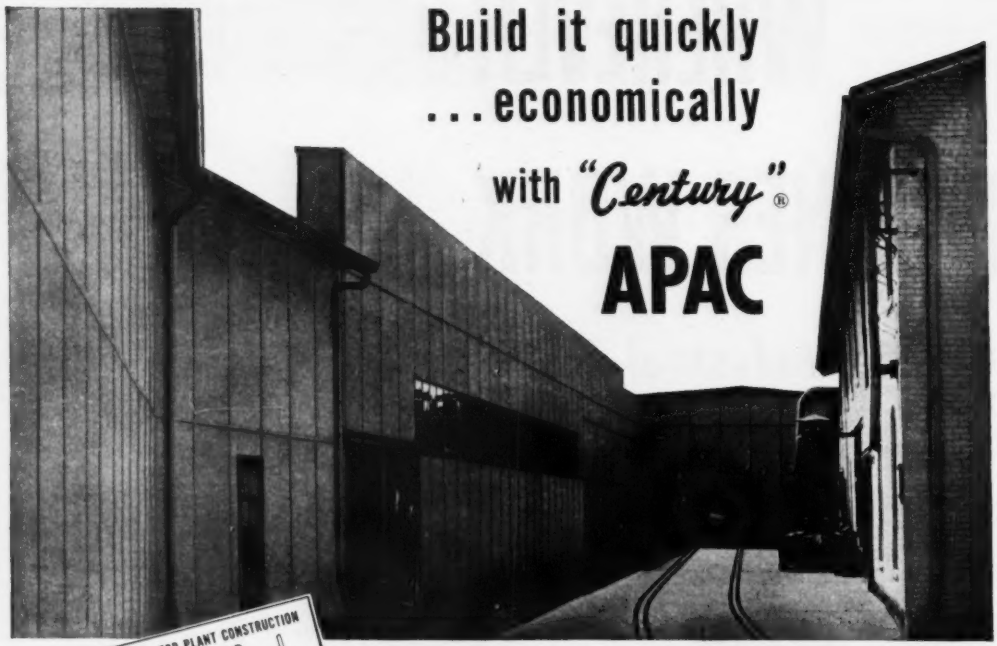
Chrysler Industrial 15—one of eight basic models

More manufacturers, more operators of industrial equipment are discovering the brilliant efficiency of Chrysler Industrial Engines on scores of different applications.

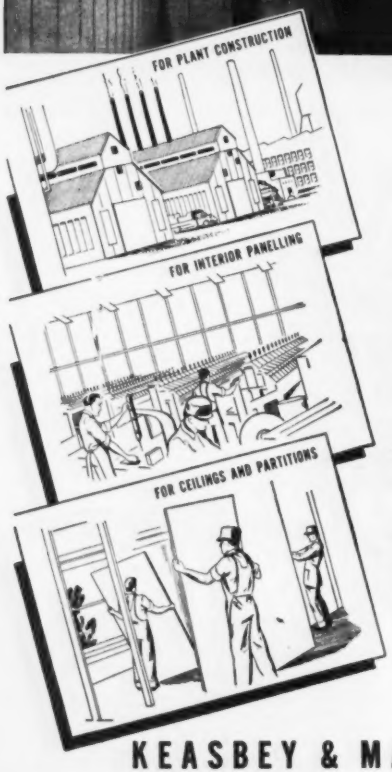
For Chrysler Industrial Engines are built *solely for industrial jobs.* Furthermore, Chrysler Industrial Engines are designed and engineered to meet the *specific working requirements* of each type of equipment they power. They can also be adapted to special regional operating conditions.

A letter of inquiry will bring an engineer well qualified to discuss your particular application. Address: *Industrial Engine Division, Chrysler Corporation, Detroit, 31, Michigan.*

Build it quickly ... economically with "Century"® APAC



Track-side building with both exterior and interior walls of "Century" APAC



Whatever your construction plans—interior, exterior, new structures, or modernization—you'll build better, at less cost, with "Century" APAC . . . Keasbey & Mattison's versatile asbestos-cement structural sheet.

Consider the advantages of building with APAC: It's a low-cost material of stone-like durability. Application is quick and inexpensive: Sheets are large size (standard 4′ x 8′); are easily cut and fitted on the job; can be fastened with ordinary nails or screws. Labor costs are low.

And APAC needs but a minimum of maintenance! The all-mineral asbestos and cement composition resists weather and moisture—*can't burn*—is unaffected by rodents or termites and will not rust or rot. The attractive natural gray surface never needs protective painting!

These are just a few of the many reasons why so many plants are using "Century" APAC for siding, office panelling, fire-resistant sheathing in shops and stock-rooms, storage bins, linings for elevator casings, shower stalls —to name but a few uses. We'll be glad to send you complete information on "Century" APAC, and the name of your nearest distributor. Write us.

KEASBEY & MATTISON
COMPANY • AMBLER • PENNSYLVANIA

K&M last in asbestos

Nature made Asbestos...
Keasbey & Mattison has made it serve mankind since 1873

News briefs . . .

ton's city government, its civil defense organization and the Illinois wing of the civil air patrol. The strip, 2,600 ft long and 200 ft wide, will be on Sanitary District property along the North Shore drainage canal. Its purpose is to permit Evanston and neighboring communities to evacuate injured and to bring aid by air should highways be destroyed in an enemy attack.

• **Pigeon-proofed building**—The famous Massachusetts State House at Boston is being "pigeon-proofed," and the birds think they are getting a raw deal. Workmen have been spreading a gelatinous substance on the roosting haunts on the Hancock Street side of the archway. The initial cost will be $250, and if the experiment proves successful, the entire building will be so treated. Spikes and wire netting had been used in a vain attempt to discourage the pigeons.

• **N. Y. City housing**—The housing policy of New York City, as it relates to new, publicly-subsidized and privately-financed construction has been criticized by Herman T. Stichman, State Housing Commissioner, on two grounds—First, that concentration of subsidized housing in limited areas leads to "ghettos" of low-income families; second, that the city is failing to encourage the location of light manufacturing industries and commercial establishments in areas adjoining public housing, thus, in his opinion, failing to make maximum use of its opportunities to reclaim and rehabilitate rundown slum areas.

• **N. E. gas pipeline work starts**—Work has begun on a 90-mile section of the Southern New England natural gas pipeline east of the Connecticut River below Hartford. Ford, Bacon & Davis, engineers, of Hartford, are supervising all phases of construction for the Algonquin Gas Transmission Co. of Boston, authorized by the Federal Power Commission to serve southern and eastern New England. Harry H. Johnson, president of Algonquin, predicts natural gas for the firm's authorized territory by 1952 despite the fact that the company must build a 150-mile line from Lambertville, N. J., to connect with its supplier, the Texas Eastern Transmission Corp.

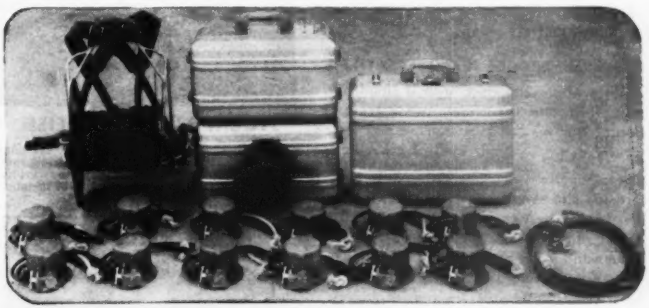
• **Another toll bridge nearly ready**—The new $2,000,000 toll bridge across the Patuxent River connecting Calvert and Charles counties, Maryland, is 70 percent complete and possibly may be opened to traffic before Christ-

(Continued on page 14)

HOW DO YOU FIND BEDROCK?

THERE IS AN EASIER WAY

with CENTURY CONSTRUCTION SEISMOGRAPH



Now you can locate bedrock and plot its contour in minutes instead of hours. To learn more about this new and PROVEN method of bedrock finding without detailed and costly drilling, write *1337 North Utica*

Century GEOPHYSICAL CORPORATION
TULSA, OKLAHOMA
EXPORT 149 Broadway, New York

MOVE MORE YARDAGE...

at less cost..

This Sauerman scraper, driven by a 200 hp. motor, reaches 500 ft.—digs through a deep bed of gravel—moves 250 cu. yd. of material an hour to screening plant.

WITH A ONE-MAN

SAUERMAN MACHINE

There's one sure way to cut costs on long range material handling—use a machine that does the whole job without help—a machine that digs, hauls and dumps in one continuous cycle.

Sauerman excavators are of two main types—power drag scrapers and slackline cableways. Either of these two machines will span a large area and move material at a rapid rate from point to point anywhere within that area, under finger-tip control of one operator.

The Sauerman power drag scraper is a general purpose excavator and stock-piler. The slackline cableway finds its greatest usefulness when the job calls for digging deep, particularly under water, and lifting to a high delivery point.

SIMPLE, ECONOMICAL, VERSATILE

Both machines are alike in their simplicity, ease of operation, moderate power requirements, low maintenance expense and their ability to work on any kind of ground.

Every Sauerman machine is carefully engineered and constructed to give long, trouble-free service and to stand up under tough digging and heavy loads. Many Sauerman machines in operation today have been running for more than a quarter of a century and still are considered just about as good as new by their owners.

LITERATURE AND ADVICE

Write today for our catalog. If you have a material handling problem that is bothering you, tell us about it and our engineers will give you their ideas as to the equipment and methods best suited to your requirements. This service is free and without obligation.

HILLSIDE EXCAVATION

The picture shows how a Sauerman scraper digs into a hill of hard-packed glacial gravel and moves the gravel to a crushing and screening plant.

STOCKPILING SIMPLIFIED

Small Sauerman scraper handles seasonal storage of 30,000 tons of surplus output annually at crushing plant, piling the surplus material in a single long pile and later reclaiming to a car-loading hopper.

DIGGING UNDER WATER

Here is a 2½ cu. yd. Sauerman slackline cableway moving gravel out of a deep pit 400' wide by 900' long which it excavated during the last two seasons while producing about 300,000 cu. yd. a season.

Rope Haulage Equipment Specialists Since 1909

SAUERMAN BROS., Inc.

532 S. Clinton St. Chicago 7, Ill.

News briefs . . .

mas if electrical equipment for the draw span can be procured. The 3,345-ft bridge has been under construction for more than a year.

• **Big block of concrete**—What is said to be the biggest block of concrete ever to be poured in Columbus, Ohio, in a single day is the concrete base for a new 4,000,000-gal water standpipe at Karl Road. The project required three mixing plants, 17 mixing trucks, three cranes, and 12 concrete chutes. Pouring of the block had to be done in one operation so it would set evenly. It is buried 12 ft in the ground, is 91 ft in diameter, and four inches thick. It was topped, later, by a concrete wall 2 ft thick and 8 ft high, filled with 3,000 tons of sand. J. R. Savage, Columbus, was the contractor.

• **More trouble for fish**—Dam builders, never loved by fisheries interests, have been getting complaints lately about the Rock Island Dam across the Columbia River near Wenatchee, Wash. Water level has been lowered by control at upstream Grand Coulee Dam to permit work on raising the dam to obtain additional power. As a result, ladders to carry the fish upriver for spawning are dry, and the fish can't get past the dam. The contractors had promised to install a pump to keep the water flowing over the ladder, but, at last reports, it had not yet arrived.

THE COVER

Last week at its 24th annual meeting in St. Paul, Minn., the Federation of Sewage and Industrial Wastes Associations elected Earnest Boyce to its presidency for the coming year. Chairman of the department of civil engineering at the University of Michigan, Professor Boyce's career in education is soundly founded on many years of public health experience. From 1920 to 1941 he was with the Kansas State Board of Health—as chief engineer and director of its division of sanitation from 1924. He has recently returned from a summer in Germany as a member of a public health planning team sent over by the Unitarian Service Committee, Inc. (see ENR Sept. 20, p. 64).

Also elected, as vice-president, was E. Sherman Chase, partner in the firm of Metcalf and Eddy since 1927. W. W. De Berard, city engineer of Chicago, was reelected treasurer.

For more about the St. Paul meeting see the news pages of this issue.

Make Budgets and Manpower GO FARTHER

with a HUBER MAINTAINER

There isn't a highway or street maintenance problem in the nation that more dollars and more men wouldn't cure.

If either of these limitations is pinching you, don't overlook a few important facts about the Huber Maintainer:

1 It's a 6,000 lb., 42½ H. P. grader with attachments that convert it to a bulldozer, lift loader, mower, broom, snow plow, berm leveler, road planer or patch roller.

2 Its variety of uses keeps it busy every month of the year.

3 It gets around without haulage equipment—covers up to 100 miles in a day.

4 It costs less than half as much as many pieces of maintenance equipment.

5 It needs only ONE MAN to perform its many jobs.

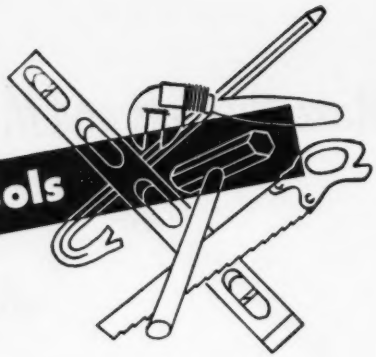
See your nearest Huber Distributor — get an order placed today.

HUBER MANUFACTURING CO. • Marion, Ohio, U. S. A.

Manufacturers of Huber Maintainers, Graders and Complete Line of Rollers

HUBER

Would you buy new tools *for every job?*



As an experienced contractor would you buy construction tools that could only be used once or twice and then thrown away? Of course not.

That's why we believe you'll be interested in re-usable Armco Steel Sheeting. It can be used again and again to keep costs low. One contractor reported that his Armco Sheeting had been pulled and re-used more than 100 times.

Pulling the units is simple with the aid of a convenient hole near the top of each section. Between jobs Armco Sheeting can be nested in compact bundles for easy storage.

Light weight and a small displacement area make Armco Steel Sheeting easy to handle and drive. Even 20-foot lengths can frequently be driven to full penetration before excavation. You can use a hand maul or power hammer.

Armco Sheeting is amply strong. You'll find it an ideal choice for shoring trenches, constructing core walls, cofferdams and many other temporary or permanent needs. Write us for complete information. Armco Drainage & Metal Products, Inc., 3461 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation.

Export: The Armco International Corporation

Armco Steel Sheeting ARMCO

More scrap means more steel
turn yours in today!

THE CONSTRUCTION WEEK

Contracts by type of work

	This Week	Cumulative 42 wks 1951	1950	% chge
Waterworks	$2.0	$169.9	$185.7	−9
Sewerage	2.2	268.0	222.0	+21
Bridges	4.1	272.2	312.9	−13
Highways	20.0	988.6	1,035.5	−5
Earthwork, Waterways	4.7	433.2	335.6	+29
Buildings:				
Public	12.8	1,803.2	1,357.4	+33
Housg., pub.	11.9	574.5	254.0	+126
Housg., priv.	22.8	1,571.6*	2,767.3	−43
Commercial	5.0	525.0	807.8	−35
Industrial	92.2	3,518.7	1,261.5	+179
Unclassified	17.5	1,437.4	1,130.1	+27
Total	**$195.2**	**$11,562.3**	**$9,669.8**	**+20**

* Revised

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

ENR COST INDEX

Index Base = 100	1913	1926	1949
Constr. Cost...Oct.'51	546.48	262.69	114.56
Bldg. Cost...Oct.'51	403.40	218.06	114.67
Volume ....Sept.'51	447	182	129

STEEL PRICE RISE—You can start counting on a rise in the price of steel early next year. Reflecting industry opinion, Admiral Ben Moreell, president of Jones & Laughlin Steel Corp. last week said he favors a price rise whether or not there is a hike in wages. He pointed out that profits from steelmaking are so low the industry is unable to attract enough private capital to keep mills operating at peak efficiency. Meanwhile the CIO United Steelworkers have entered negotiations for pay increases and indicate they will not be satisfied with the Wage Stabilization Board limitations. Wage increases are almost certain to result in a rise in the cost of steel.

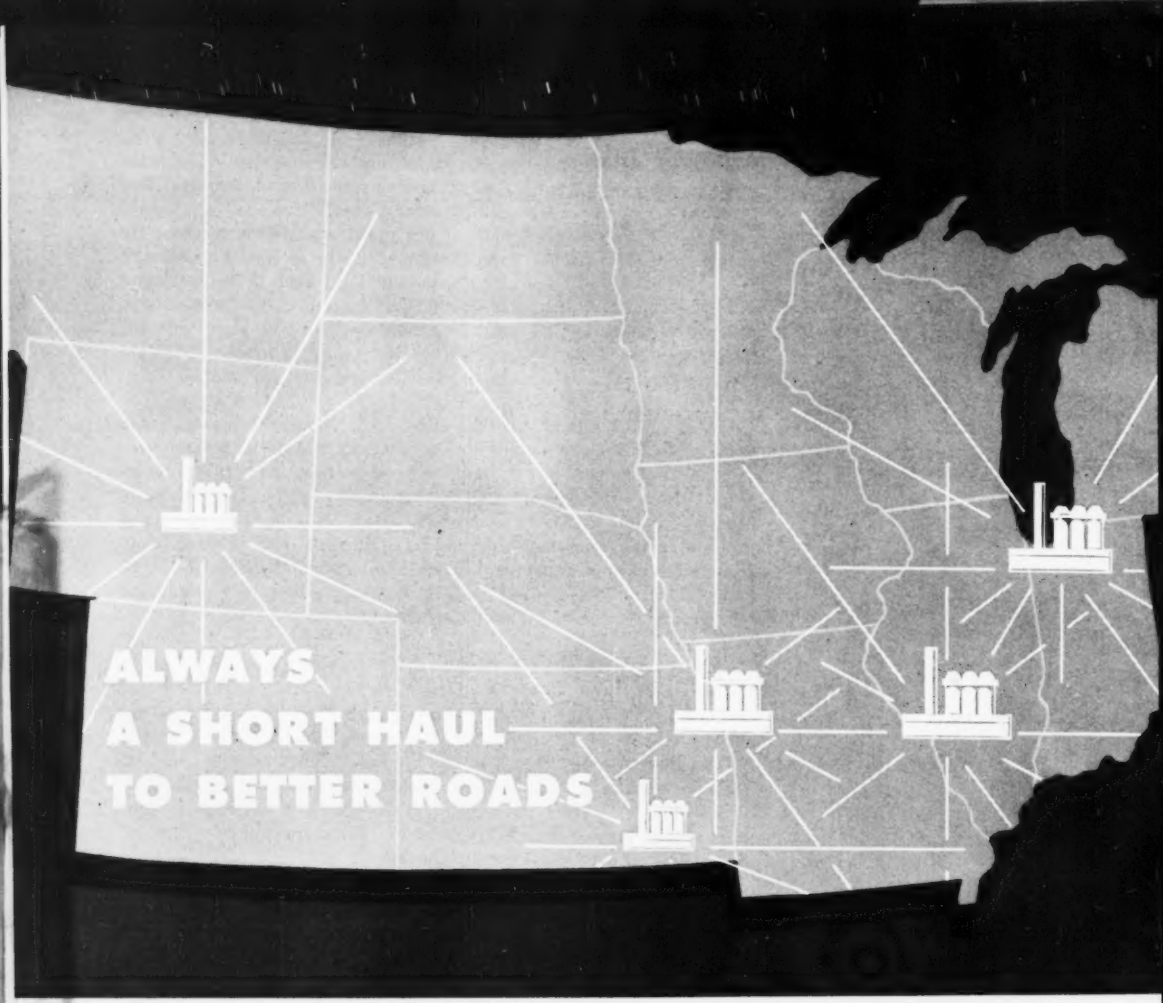
CANADA MAY GO IT ALONE—Hearings before the House Public Works Committee on legislation authorizing the St. Lawrence seaway and power project so far have yielded some important conclusions—those opposed have not been swayed by Premier St. Laurent's bid for Canada to build the project alone. Nor has any new and unusual fervor been demonstrated in support of U. S. participation. Some who testified were frankly skeptical about Canada's ability to undertake the $818-million project. With hearings now postponed indefinitely, its future appears dim as ever.

BOWBELLS IRRIGATION—At a conference last week with North Dakota and Montana officials, Secretary of Interior Oscar Chapman agreed to have a three-man review board study the disputed Bowbells, N. D. area to see if it is irrigable. The Reclamation Bureau had reported that the 45,000-acre Bowbells block—part of the $200 million Missouri-Souris project—is not irrigable because the soil is too "tight" and doesn't drain properly. A report from W. G. Sloan, former Reclamation Bureau Engineer and co-author of the Pick-Sloan plan, disputes this finding.

THE OLD CURMUDGEON—Former Secretary of the Interior Harold L. Ickes has unleashed another attack on the U.S. Army Corps of Engineers. In the foreword to Arthur Maass' new book "Muddy Waters: The Army Engineers and the Nation's Rivers" he states as follows: "It is to be doubted whether any Federal agency in the history of this country has so wantonly wasted money on worthless projects as has the Corps of Army Engineers. No more lawless or irresponsible Federal group than the Corps of Army Engineers has ever attempted to operate in the United States, whether without or within the laws."

ALUMINUM FOR COPPER—The National Production Authority is urging substitution of aluminum wherever possible for copper in the manufacture of electrical equipment. They say aluminum supplies have a brighter future than either copper or steel. Particularly recommended is use of ¼-in. aluminum sheet. After the middle of 1952, NPA says aluminum rod and bars are expected to be available.

STEEL SAVING PAYS OFF—Navy's Bureau of Yards and Docks is stripping steel out of new projects wherever possible. As a start it has eliminated steel expansion-joint dowels and 300,000 sq yd of wire mesh from its concrete pavement plans for an aircraft parking apron at the Marine Corps Air Station, Cherry Point, N. C. Besides saving steel, the changed paving plans will cut the $1.4-million cost of the project by about 18%.



From one of Standard's 5 Midwest Refineries

Take the advantages of asphalt road construction or resurfacing . . . quick laying, easy upkeep, low cost, long service, use of local aggregate . . . and add the availability of Standard Oil asphalt. That's the answer to road building problems for highways and municipal streets alike.

With five asphalt-producing refineries strategically located throughout the Midwest, Standard offers worthwhile savings in shipping time and freight costs. A Standard Asphalt Representative will help you take advantage of this short haul to better roads —to smooth, glare-free, safe roads.

Call on him too, for help in selecting the type of asphalt construction best suited to your needs and local conditions. For the services of a Standard Asphalt Representative, write:

Standard Oil Company (Indiana), 910 South Michigan Ave., Chicago 80, Illinois.

STANDARD OIL
ASPHALT

STANDARD OIL COMPANY STANDARD *(Indiana)*

COPPER—SHORTAGE OF LONG DURATION

Copper and structural steel are the top "shortage" materials for construction today. The two materials are just about equally scarce—requests for fourth-quarter allocations of structurals exceeded the supply by about 80%, while requests for copper were 70% greater than the amount available.

But, all signs point to the probability that the copper shortage will last much longer than other shortages. Supplies of steel and aluminum for non-defense use should be increasing by 1953. But there is a good chance that civilian industries will get no more copper in 1953 than in 1952.

• **Imports**—Imports of copper have fallen—and are likely to remain low. That's one of the main reasons why copper will stay scarce longer. Imports usually equal 35 to 40% of U. S. consumption of copper.

So far this year, imports are running about 30% under 1950 levels. Result is that the U. S. will probably have less copper this year than last—and imports are not expected to improve much, if at all, next year. Government officials are trying hard to raise imports, by agreeing to international allocation of the metal and by encouraging increased output in producing countries like Chile. But—at best—the trade feels that these steps will only prevent imports from falling farther. They are not expected to add materially to imports in the near future.

• **Production**—U. S. copper production cannot be increased fast enough to add much to available supplies during the next two years. That's the other big reason why copper is going to be the most critical basic metal. Output of steel and aluminum is rising fast—compared to 1950, we should be getting up to 70% more aluminum and 20% more steel by 1953. By that time also, structural steel should be in better supply, since the bulk of the military construction program should be taken care of. But domestic production of copper will increase very little—perhaps 3% or so—in the same period.

New mines are being opened in Nevada, Montana, Arizona and other areas. The U. S. government is encouraging these developments by granting long term purchase contracts and tax benefits.

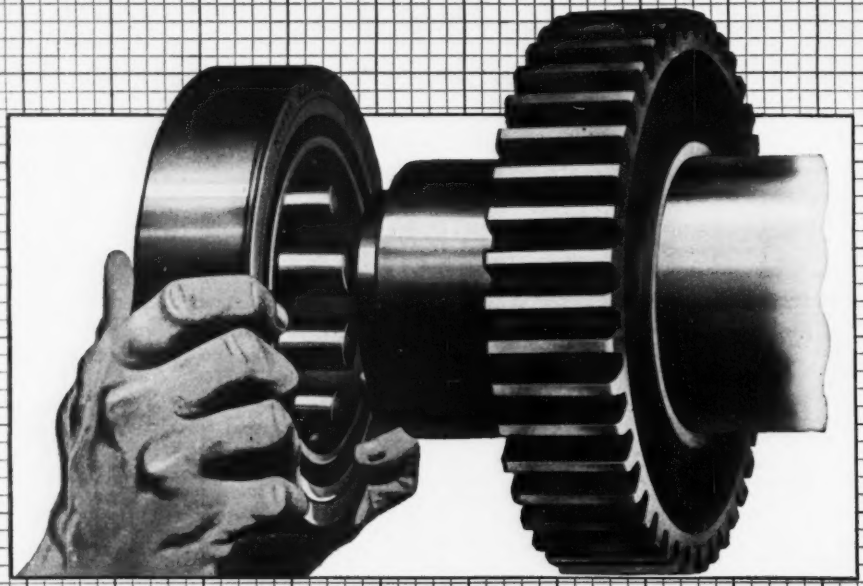
But the new mines won't be in full production for two to five years. It takes that long to open the mines, put up buildings, install equipment and get into operation. Even when they are producing, the new facilities will add only a relatively small amount—a few percent a year—to the total U. S. output of copper.

• **Substitution**—With copper due to be increasingly short next year, substitution offers builders their best chance to meet the government's 1952 goal of $26.5 billion in new construction. And the long-range nature of the copper shortage means that substitution will be important after 1952 as well.

Homebuilders already use many substitutes for copper, such as waterproof paper for flashing, plastics for door knobs, and steel piping. Other substitutes, such as plastic piping, and aluminum wiring will be increasingly important in the future. Additional savings may be made by designing houses and apartments to require less copper.

In heavy construction, some savings are already being made. Use of rubber or wrought iron water stops is an example. Other substitutions may be possible, and structures can be designed to use a minimum of copper wire and piping. Use of low voltage control systems in wiring industrial buildings has been suggested as one way to make substantial savings.

Substitutes run into problems of shortages, too. Aluminum and plastics, two possible substitutes, may be just as scarce as copper over the next year. But they have one big advantage over copper—supplies available will increase much sooner and faster than supplies of copper.



Simplify Shaft Design With HYATT HY-LOADS

The simplest way to mount an inner race on a shaft is by a press fit. Hyatt Hy-Load Roller Bearing inner races are made from carburizing type steels, heat treated to provide tough and ductile cores which safely permit relatively heavy fits. This fit is sufficient to hold the race in place without the use of accessory holding means, such as snap rings, lock nuts, or keys, and permits more simple and economical shaft design and construction. The press fit also locates the race properly and avoids the hazard of cocking or eccentricity which may occur with a loosely fitting race clamped endwise.

The holding of races on rotating shafts without auxiliary devices is just one of the features of Hyatt Hy-Load Roller Bearings. For complete information write for catalog 547. We'll be glad to send one to you. Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.

HYATT ROLLER BEARINGS

Still higher road costs

New Jersey's Turnpike Commission has just asked its bondholders to approve the issuing of $35,000,000 more in bonds, bringing the total cost of building and financing that 118-mile highway to $255,000,000. And across the Delaware in Pennsylvania, E. L. Schmidt, chief engineer of the Pennsylvania Department of Highways, told a recent meeting in Philadelphia that the last contract to be let on the Schuylkill Expressway to serve that city amounted to $4,728,000 for 2.14 miles, or over two million dollars a mile.

Holders of the New Jersey Turnpike bonds were quick to approve the additional issue. They had little choice. All costs have gone up since the estimates were made originally in 1949. Land alone cost $17,632,000 or nearly $150,000 a mile, as against an estimate of $10,145,000. Not too long ago $150,000 a mile would have built what was considered a modern highway.

The highway standards to which such limited access highways as the Schuylkill Expressway and the New Jersey Turnpike are being built are important factors in determining the higher costs, plus the fact that these highways are being cut through populous regions requiring many grade separations and costly interchanges. But even outside of densely built up metropolitan areas there is growing appreciation of the fact that highways have got to be built to higher standards than those that were set even ten years ago if those highways are to stand up under modern traffic. Such higher standards, inevitably, mean higher costs, even though basic construction costs had remained stable instead of doubling in the past 10 years.

Technical aid for India

The announcement that India has signed a contract to pay the U. S. Bureau of Reclamation $150,000 a year for technical assistance on its river development schemes (see p. 27) heralds a happening that has several facets, ranging from interesting to very important. It is interesting, for example, that a foreign country has agreed to pay for technical aid of a type that is normally furnished free under our Point 4 program. Praiseworthy as this act may be, however, it must be set off against the fact that India was allotted $1,200,000 of Point 4 funds last December, with no repayment strings attached.

But if the payment factor is not particularly important, the fact that India is showing a continuing desire for U. S. technical guidance is. Both from a humanitarian and a political standpoint a more healthy, prosperous and strong India is an objective to which the large majority of Americans want to lend sympathetic and effective support. It is for this reason that it is very important to note that the bulk of the payments under the contract has been earmarked for research and design.

If this work is to relate to new projects, there is grave doubt of its value. At least it temporizes with the needs of the moment. For there is a large body of opinion among those familiar with India's valiant efforts to increase its water conservation that believes present emphasis should be placed on construction of projects already under way rather than on more design studies. In this connection the illustration used by Reclamation Commissioner Michael W. Straus to indicate how our advice has already saved India money seems somewhat unfortunate. He noted that our checking of the design for Kosi Dam had eliminated enough concrete to save $10 million. But Kosi Dam is still just a dream, far beyond India's present capabilities either to finance or construct. A future saving on such a project is of doubtful utility, particularly when money and technical guidance are sorely lacking to complete such dams as Hiracud, Tungabadra and Bhakra, which will up crop land 5 million acres and power supply over 100 percent.

There is no question but that the capable engineers and research specialists of the Bureau of Reclamation will give India her money's worth. They have already played a vital role over the years in advising India on irrigation practices, water laws and design procedures. But for India's immediate welfare, a half dozen U. S. construction superintendents would be more in keeping with her needs.

How's your infrastructure?

The military philologists have hit pay dirt again. Unlike the gobbledygook artists who use ten words when two would do, the military word-coiners seek single words to convey broad meanings. Their newest is the mouthfilling morsel of "infrastructure." Because the word is not in the dictionary, but apparently is related to civil engineering and construction, an attempt at a definition is an obvious service for us to render.

From the meaning of "infra," a literal translation would be "underneath structure." This might be foundations, but from the use of "infrastructure" in defense planning documents, that is obviously not the meaning. Rather it seems to mean all military structures that are beneath or behind, in other words in support of, the active military organizations of airplanes, fighting men and ships. Thus airfields would be classified as infrastructure. So would be ship repair yards and depots. Perhaps barracks are too. Certainly military bridges are included. In brief, infrastructure embraces all military civil engineering work. Hence from now on it is obviously correct to refer to the infrastructure industry when you mean construction for the military.

Let's get on with our infrastructuring!

HUGE STEEL-ARCH HANGARS go up fast!

▲ Principal roof members are curved, riveted plate girders. Pinned at supports and crown, they have a constant depth, back to back of flange angles of 5 ft. 7 in. and rise 49 ft. 11 in. to provide a clear height at center of 75 ft.

◀ Interconnected by 2-story steel frame lean-tos ranging in width from 39 to 103 ft., the hangars form a building 1,148 ft. long and 219 ft. wide. Each hangar provides a 300 ft. clear floor space.

302′ Steel-Arch Spans SIMPLIFY ERECTION . . .

PROVE MOST ECONOMICAL TYPE OF CONSTRUCTION

PROJECT: Three hangars and interconnecting lean-tos at New York International Airport, Queens, New York City.

DESIGNED BY: Port of New York Authority, Roberts and Schaefer Company, Consulting Engineers. Lorimer and Rose, Associate Architects.

GENERAL CONTRACTOR: Stock Construction Corporation.

STRUCTURAL STEEL: 3,600 Tons. Fabricated and erected by American Bridge Company.

Erected in 13 months (complete with heating, fire-alarm and lighting systems) the three giant, 300′-wide, 219′-long hangars with interconnecting 2-story lean-tos have set a record for this type of construction—both as to length of spans and speed of construction.

Erected in four sections, the 302′-steel arches are pinned at the supports and crown to provide a clear height at the center of 75 ft. Each hangar is large enough to accommodate 6 Douglas DC-6 transports or four double-deck Boeing Stratocruisers. In addition, parking aprons on both sides of the building can take 15 aircraft of the type having a turning circle of 175 ft., or 19 of the smaller type having a turning circle of 150 ft.

The decision to use long panels between solid web steel arches for this important project was made after studied consideration of other types of construction materials. And again steel proved most economical by meeting all comers in competitive bids.

If you'd like to know more about the advantages of American Bridge Company *fabricated* and *erected* steel construction, just call our nearest office.

AMERICAN BRIDGE COMPANY

General Offices: Frick Building, Pittsburgh, Pa.

Contracting Offices in: AMBRIDGE · BALTIMORE · BOSTON · CHICAGO · CINCINNATI · CLEVELAND · DENVER · DETROIT · DULUTH · ELMIRA · GARY · MINNEAPOLIS · NEW YORK · PHILADELPHIA · PITTSBURGH · PORTLAND, ORE. · ST. LOUIS · SAN FRANCISCO · TRENTON

UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS

AMERICAN BRIDGE

UNITED STATES STEEL

ENGINEERING NEWS-RECORD

OCTOBER 18, 1951 VOL. 147 NO. 16

OPS drafts construction price curbs

Here is a first look at control regulations which will become effective after Nov. 1

WASHINGTON—The last "i" is yet to be dotted and the last "t" crossed, but the new Office of Price Stabilization order controlling the construction industry is now very nearly ready for issuance. The new target date of Nov. 1 for effective use of the order will probably be met.

As foreseen in these columns more than a month ago (ENR Sept. 6, p. 23) the order will cover all construction contractors, big and little, and is aimed at controlling profits by tight control of the percentage of "markup" (overhead and profit) to be permitted.

Principal provision is this:

A base period is set up as the 360 days between July 1, 1949 to June 24, 1950. Using this base period, the ceiling price for any job bid after the order is in effect will be computed from estimated cost of the work, plus a markup not to exceed 90% of the highest markup used or quoted on a bid or contract on similar construction (in size and character) during the base period.

• **Who and what**—As now written—through a series of broad definitions—the order includes every kind of contractor in the construction industry, as well as a number not strictly considered to be construction men (installers of appliances such as washing machines).

The type of work covered runs the entire gamut of the industry, from highways and heavy building construction to installers of railings, posts, light standards, from house builders to building wreckers, repairers and landscape contractors.

Not covered are: Field erection or installation of equipment or machinery already covered under Controlled Price Regulation 30; household appliances, where installation is not required (refrigerators, irons); charges for erection of fabricated structural shapes, plates and related products by the producer.

Also in the clear are prices of materials or equipment—if it was the practice in the base period to sell such equipment manufactured to specification without installation, or to quote a separate installation charge.

• **Division made**—For purposes of the order, "sales on a contract basis" are divided into four major categories: Lump-sum contracts; cost-plus-fixed-percentage fee contracts; cost-plus-fixed-dollar fee contracts; and cost-plus with guaranteed limit (upset price).

On unit-price bids, this provision is made:

If the contractor is requested to submit a bid on certain types of work in terms of unit prices, he may adjust his submitted unit estimates "in any manner, so long as the total amount for the bid is no greater than the lump-sum ceiling price."

For each of these divisions, methods of computation of ceiling prices are given in detailed step-by-step procedures that start with the finding of profit markup over the same cost base in effect during the base period on a comparable job, and progress through a number of arithmetical steps.

• **Escalator permitted**—One interesting fact in the order is that an escalator clause is permissible under the lump-sum contract, "if the buyer agrees." Later cost increases may be provided for, if they are no greater than those allowed by the regulation at the time such increases are incurred by the contractor.

Ceiling prices previously determined under CPR 34 (the OPS order for service trades) are not affected by the new order—a contractor may continue to sell a construction service covered by the new regulation at the ceiling price he established and reported under CPR 34.

(*Continued on page 24*)

NPA allots more structurals

Here are the highlights of a statement by Manly Fleischmann, National Production Authority administrator in materials allotments for the first quarter of 1952 for the construction industry.

• Direct military demands in the first quarter will take 12% of the county's entire steel supply, 24% of copper and 40% of aluminum.

• A slight improvement—about 100,000 tons—is expected in the supply of structural steel in the first quarter but civilian construction will get little if any of the increase.

• Schools and hospitals in defense areas will have a priority among thousands of deferred projects, those already underway will also be favored.

• More materials are being directed into the expansion of industry to build up productive capacity. Structural steel for this purpose is about 50,000 tons greater than that which was allotted in the current quarter.

• Allotments for construction of power plants have been increased about 20,000 tons to create a better balance with expanding industries.

• While NPA expects production of structurals to be higher, it expects total steel production to drop about 200,000 tons in the first quarter as compared to the current quarter.

1ST QUARTER 1952 ALLOTMENTS OF CONTROLLED MATERIALS

Claimant Agency and Program	Total Steel (Tons)	Total Copper & Copper Base Alloys (000 lbs)	Total Aluminum (000 lbs)
Dept. of Agriculture	43,350	2,440	100
Dept. of Army (Civil Works)	35,200	1,525	100
Atomic Energy Comm.	141,050	8,515	6,000
Defense, Dept. of	2,408,700	297,000	250,000
Defense Elect. Pw.	309,550	79,050	39,000
Defense Minerals Ad.	36,927	1,605	200
Defense Solid Fuels (Coke Ovens)	17,258	400	70
Defense Solid Fuels (Coal Mines)	9,096	213	15
DefenseTrans. Admin.	63,253	1,759	200
Federal Security Org.			
Hospitals	64,123	2,583	400
Education	96,296	3,897	10
General Services	24,014	640	100
Housing & Home Finance Agency	83,700	5,978	250
Maritime Admin	100,975	4,840	100
OIT-ECA	652,500	10,435	2,000
Petroleum Adm. for Def	1,708,500	8,300	850
Public Roads	201,520	900	250
Veterans Admin.	12,395	1,337	80
National Production Authority Divisions			
Aluminum & Magnesium	12,850	.....	100
Building Materials	1,113,100	51,850	45,300
Canadian	415,050	4,600	2,150
Constr. Machinery	487,654	7,220	2,100
Copper	43,250	3,300	2,260
Electrical Equip.	586,710	147,169	24,250
Iron and Steel	243,216	17	.....
Lumber & Wood Prod.	6,840	175	1,000
Metalwkg. Mach. & Equip.	556,000	36,028	7,000
Mining Mach. & Equip	114,661	3,283	250
Tin, Lead & Zinc	.....	3	.....
Water Resources	158,152	3,633	175
MRO-Self-Certification, Field Cases & Small Users	2,334,426	105,159	43,833

OPS price curbs...

(Continued from page 23)

Special provision is also made for sales based on hourly charges for labor alone, or on an hourly charge for labor plus charges for materials, equipment installed, or equipment used.

• **Suppose you can't?**—Contractors who find they cannot price by any of the methods listed, must apply to the local OPS office for approval of a suggested schedule, accompanying their application with certain information. The regulation requires that ceiling prices requested in such an event must be comparable to the ceiling prices of the "most closely competitive seller of the same or similar services."

This provision has particular effect on what OPS calls "new sellers"—contractors new to the construction business, or new to the type of work currently being bid. It requires, among other things, that the services "sold" in such a situation must not be sold until 20 days after mailing of the application for approval of the ceiling price. And if OPS decides that more information is required, the seller cannot sell his services for an additional 15 days after answering the OPS request for added details.

• **What's needed**—In any case, an applicant for ceiling price who finds himself unable to price by the regular methods, must include with his application the following information:

Kind of sale or sales to be made and areas in which to be made; whether or not a ceiling price has been established under CPR 34 (if so, the prices established must be included); reasons why he cannot price under the methods given in the new regulation; the markup for overhead and the markup for profit proposed, and why he believes these are in line with the regulation; the name and address of the most closely competitive seller and his ceiling prices if available; the cost base on which the proposed markups are to be applied.

• **Plenty of records**—Contractors must prepare and keep for the life of the Defense Production Act of 1950 (as amended) and for two years thereafter, all records necessary to determine whether ceiling prices, markups, fees, rates and charges have been figured correctly.

These records will include:

All records showing cost to the contractor of labor, materials, equipment, subcontractors charges and other expenses in connection with sale of construction services; all records showing charges made or prices offered in connection with sale of any construction service during the base period, or after the effective date of the new regulation; all records, reports, applications

How to figure your ceiling prices

DEFINITIONS:

Base period markup is the highest percentage markup for profit, overhead, or for profit and overhead, which you had in effect during the base period over a cost base for any type of job or installation which you performed or on which you made a bid.

Base Period Price is the highest price you had in effect to each class of buyer during your base period for each type of construction.

Cost Base is (1) That group of costs to which, in accordance with your regular base periods of accounting and estimating procedures, your markups for profits, for overhead, or combined profits and overhead are applied in arriving at your total bid price for a lump-sum contract; or (2) that group of cost for which under terms of a cost-plus contract, your fixed percentage fee is applied.

Profit Markup is the highest percentage markup for profit (as distinguished from markup for overhead) which you had in effect during your base period for the sale of comparable construction service to the buyer of the same class.

PROCEDURE FOR LUMP-SUM CONTRACTS:

1. Find the profit markup over the same cost base in effect during the base period on a comparable job.

2. Decrease that markup by 10%. (If profit markup over the same cost base was 15% in the base period, you must now use 13.5%.)

3. Multiply this lesser profit markup by your estimated total current cost to you of the part of your cost base figured according to your base period practices, and using the cost in effect at the time you make your bid.

4. Find the markup for overhead over the same cost base for overhead that you had in effect during your base period for a comparable contract.

5. Multiply the markup for overhead by the estimated total current cost of the parts of your cost base figured according to your base period practice and using the cost in effect at the time you made your bid.

6. Find the estimated total current cost to you, exclusive of overhead costs covered by your markup for overhead (4), using your customary base period practices and the cost in effect at the time you make your bid.

7. Add the amounts for profit (3), overhead (5) and costs (6).

This is your ceiling price.

COST-PLUS FIXED PERCENTAGE FEE CONTRACTS:

1. Find the highest percentage that you used as a fee in a cost-plus percentage fee contract in which costs were most nearly like the contract your propose to perform.

2. Separate (1) into the percentage representing overhead and that representing profit.

3. Lessen your profit percentage by 10%.

4. Add your overhead percentage fee as found in (2) to your diminished profit percentage (3).

This is your ceiling percentage fee, which may be added to current costs of all costs of the contract.

COST-PLUS FIXED DOLLAR FEE CONTRACTS:

1. Find the dollar amount which you used during the base period as a fee in similar contract in which the costs were most like the contract you propose to perform.

2. This dollar amount is your ceiling dollar fee and may be added to the current costs of all the elements of cost in the contract.

COST-PLUS GUARANTEED LIMIT (UPSET PRICE):

This is a contract in which you establish a lump-sum price, no greater than your ceiling price (see lump-sum contracts) and which is the highest price your buyer must pay you, but in which the buyer shares any savings below this price, as measured by operation at cost-plus a percentage (or other) fee. In such a contract, any price not exceeding the upset price may be paid and received.

TIME AND MATERIALS, HOURLY RATE, OR INSTALLED SALE BASIS:

A sale based on hourly charge for labor alone, or on an hourly charge for labor plus a separate charge for materials, equipment installed, or equipment used is priced by adding the applicable ceiling price, figured as follows:

1. **Labor charge.** To find your ceiling hourly charge for labor you must:
   a. Find the highest hourly charge which you made to the buyer of the same class for each kind of labor during the base period.
   b. Find the base period hourly cost to you of each kind of labor. This cost must be established for the same payroll period as the hourly charge found

under the new OPS order

in (a) and must include the hourly wage rate paid by you, plus the applicable payroll costs per hour.

c. Find the current hourly cost to you of each kind of labor, including payroll costs.

d. Subtract, for each kind of labor, the amount found in (b) from the amount for the same kind of labor in (c).

e. Add, for each kind of labor, the amount found in (d) to the base period charge found in (a). This is your ceiling charge for labor.

2. Materials charge; installed equipment charge. Procedure:

a. Find the highest percentage markup over the materials or equipment cost in effect during the base period for material or equipment of the same category for the same class of buyer.

b. Separate this percentage markup into profit and overhead.

c. Subtract 10% from your profit markup.

d. Add overhead percentage (b) to the diminished profit (c).

e. Multiply the current cost to you of the material or equipment installed by this markup (d).

f. Add the current cost to you of material or equipment to this amount (e). This is your ceiling charge.

3. Use of own construction equipment:

a. Find the highest hourly charge which you had in effect during your base period for an item of construction equipment of the same kind.

b. Find the base period replacement cost to you of that equipment.

c. Find the current replacement cost to you of that equipment.

d. Divide the current replacement cost (c) by the base replacement cost (b).

e. Multiply the base period charge (a) figure found in (d). This is your ceiling charge.

4. Use of equipment not your own:

a. Find the highest percentage markup over your rental costs, operating costs or rental and operating costs in your base period.

b. Separate the percentage markup found under (a) into the percentage for overhead and the percentage for profit (plus your operating expenses if not otherwise figured).

c. Subtract 10% from your profit markup (b).

d. Add the diminished profit markup (c) and your overhead markup (or overhead markup plus your estimated operating expenses) as found in (b). This is your total markup.

e. Multiply this total markup by the current cost to you of rental, or by the current cost of operating expenses, whereby the current cost of rental plus operating expenses, whichever was practice during base period.

f. Add this amount (e) to the current cost to you of rental alone if your estimated operating expenses were provided for the base period markup over cost of rental. If your base period markup did not include your operating expenses, add the amount found in (e) to the sum of the current cost of your rental plus the current actual cost of your operating expenses. This is your ceiling charge.

5. Installed sales:

For the sale of an item of material or equipment, together with installation service, billed to a buyer as a single charge:

a. Find the highest percentage markup over the cost to you of the item, or over the cost to you of the item plus the installation service required, which you had in effect during the base period.

b. Separate the percentage markup found under (a) into overhead and profit (plus estimated installation cost if not otherwise figured).

c. Subtract 10% from your profit markup (b).

d. Add this diminished profit markup (c) to that part of your base period overhead markup (or overhead plus your installation expense) as found in (b). This is your total markup.

e. Multiply this total markup by the current cost to you of the item alone, or by the current cost to you of the installation service, or by the current cost to you of the item together with the installation service, whichever was your practice during the base period.

f. Add the amount found in (e) to the current cost to you of the item alone if your estimated installation cost was provided for in your base period markup. If it was not included in your base period markup, add the amount found in (e) to the sum of the current cost to you of the item, plus the current actual cost of the required installation. This is your ceiling cost.

and petitions pertaining to sale of services under GCPR, CPR 34, or the new rule.

Also—all written contracts and all written bids; special records for lump-sum and cost-plus contracts.

If more than one place of business is maintained, ceiling prices may be established for each (if it has exclusive coverage of an area or field of activity), but then independent records must be maintained for each office.

• **No fair**—The regulation is specific about what actually constitutes a violation.

Specifically cited are acts that result in obtaining a price higher than is permitted—particularly such acts as "making use of commissions, cross sales, transportation arrangements, premiums, discounts or any other price differential, tie-in agreements, or trade understandings."

A contractor is of course legally entitled to discontinue entirely selling his services. But, says the regulation, if he discontinues a service, he may not offer to sell in its place a higher-priced service that "will achieve the same general purpose as the service he discontinues" unless he can prove that equipment and supplies are not available, would cost too much, or discontinuance of the services would enable him to maintain other services more necessary to the community.

Violators are subject to criminal action, civil action and suits for treble damages.

• **A break?**—If he could disregard competition, the contractor could increase his dollars-and-cents profit margin in step with rising costs. Competitive bidding would be the main brake on increasing the dollar profit in line with the percentage allowance.

Construction costs have risen about 8%—on the basis of the ENGINEERING NEWS-RECORD Cost Index—since the highest base period month (ENR Sept. 13, p. 23). So a cut to 90% in the markup would give contractors today roughly the same dollars-and-cents margins they had in June, 1950.

• **Doubt expressed**—The regulation generally is viewed with a dubious eye by construction men.

Most are aware that the regulation is an attempt to answer their demand for an order tailored to the special needs of the construction industry, but they pointed out that, for one thing, it militates against entering new lines of work (because of the lengthy delay in approving ceiling prices) and heavily against new business.

Most felt that they could comply with the regulation—but one pointed out the difficulty of enforcement in a business where profit markups are quite often a closely guarded secret.

REACHES OHIO STATE LINE—The Pennsylvania Turnpike last week reached the Ohio State line where the ends of the forms are shown here. Completion of western extension of the turnpike from Pittsburgh is expected in November. (Ed Shuba photo, Youngstown Vindicator.)

New Jersey Turnpike toll rates set; fees proposed for New York Thruway

Toll rates are set on the New Jersey Turnpike, tolls for the New York Thruway are proposed, and in Colorado toll increases are proposed on the Denver-Boulder Turnpike.

Elsewhere, plans for a Florida turnpike are advancing, new interest is stirring for a New England Thruway, and Dallas, Texas, is considering a new expressway.

• **New Jersey**—Toll rates announced by the Turnpike Commission range from $1.75 a passenger car for the full 118-mile length of the turnpike to $5.00 for the largest semi-trailer type of truck.

The average rate per mile is 1½ cents for passenger cars running the full length, but the rates per mile vary from one cent per mile below New Brunswick to over four cents per mile on some of the sections at the north end.

The average rate for passenger cars thus will be substantially higher than the rate of one cent a mile on the Pennsylvania Turnpike, where the new rate from the Ohio line to the outskirts of Philadelphia, 328 miles, will be $3.25 when the western extension is opened this fall. Average rates for heavy trucks on both highways, however, will be very similar, about 4.8 cents per mile.

Although the cost of the turnpike has increased substantially over the 1949 estimate (ENR Oct. 4, p. 26), the passenger-car rate has not been increased over the $1.75 set in 1949 by the Turnpike Commission's traffic consultants, Coverdale and Colpitts. Truck rates also are the same except for an increase from $3.10 to $3.50 for two-axle trucks.

• **New York**—The State Thruway Authority may abandon earlier plans to build the 535-mile superhighway from New York City to Buffalo without toll booths, and shift to a combined permit-toll financing arrangement.

Consulting engineers for the project, Madigan-Hyland have recommended that passenger cars registered in New York State pay either a $10 annual fee for unlimited use of the Thruway, or 1 cent a mile. Out-of-state cars would pay a straight 1 cent a mile.

Trucks of less than 7,000 lbs unloaded with would pay 1 cent a mile, and heavier trucks would pay 2 to 6 cents a mile depending on weight. All trucks would be exempt from the States new weight-distance tax. A toll of 3.5 cents a mile is proposed for buses.

• **Other plans**—Plans to up tolls on the new $6.3 million Denver-Boulder Turnpike to open in November, were announced by State Highway Engineer Mark Watrous. Initial tolls may be raised from 25 to 35 cents for cars, and from 35 or 40 cents to 50 cents for trucks on the 17.4-mile link.

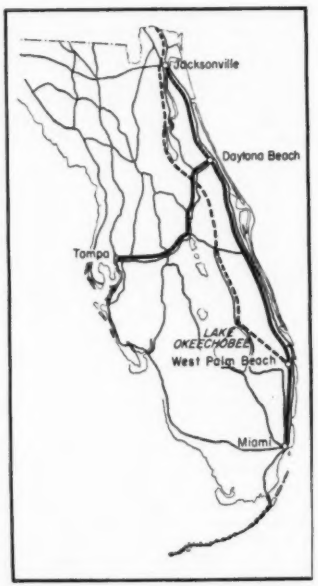
Florida's State Road Department, now studying plans for a proposed 350-mile toll road from Jacksonville to Miami, is planning to become acquainted with Pennsylvania's Turnpike. Engineers are arranging to get first hand information on planning, methods of construction, and other problems.

Gov. John Lodge of Connecticut has been requested to appoint a special commission to study and report on a route for the New England Thruway, in a resolution passed by the Greenwich Representative Town Meeting.

Civic officials in Dallas, Texas, are studying preliminary plans and discussing details in routing of a proposed east-west expressway to run from Highway 67 near White Rock Airport, skirt the southern edge of the downtown business section, and meet Highway 67 again near the Clarendon intersection.

• **Link planned**—Congress has approved a bill consenting to the building of a bridge across the Delaware River near Bordentown, N. J., which will connect the Pennsylvania and New Jersey Turnpikes.

The Port of New York Authority has voted to finish construction of $4 million in Lincoln Tunnel connections to the New Jersey Turnpike at a cost-plus basis. The connections are expected to be completed in time for the opening of the northern end of the turnpike in January.



GETS GO-AHEAD—Florida's Improvement Commission has given the green light to detailed studies by the State Road Department of the proposed Jacksonville-to-Miami Turnpike (see dotted line). Consulting engineers will be called in to give an impartial report on financial feasibility of the project.

First of its type

India signs technical aid agreement for Bureau of Reclamation assistance

WASHINGTON—India has made an agreement for U. S. technical assistance under which she will pay the full cost of about $150,000 a year for help from the Bureau of Reclamation.

A. N. Khosla, chairman of India's Central Water and Power Commission, is visiting the United States to complete arrangements under the agreement, signed in India Sept. 23.

Part of the annual expenditure will go to five or six reclamation engineers who will aid the central government's big multi-purpose river development program in India. But the bulk of the money will be spent for research, tests and services at the bureau's engineering center in Denver. After a week in Washington, Khosla went to Denver to work out details.

• **Is first**—Consumated under the same law that authorized the technical cooperation (Point 4) administration in the State Department, the Indian agreement is the first of its kind. It differs from Point 4 contracts in providing full payment by the foreign government for U. S. services.

As Khosla sees it, the agreement will give India nearly all the outside assistance it needs for its present ten-year water program—at a rate of about $200 million a year. But while he is here Khosla is also looking for about a dozen American engineers to work directly for the Indian government in special jobs that are outside the experience of India's own technical staff.

Services to India at the Denver laboratories will include study and analysis of scientific and engineering data, testing of materials for dams, and the construction and testing of hydraulic models. They will also include services and advice requested to determine the adequacy of designs or construction. The services will not include project construction, direct supervisory work, or preparation of detailed design and construction drawings or specifications.

• **Policy given**—Sharing American engineering knowledge with other nations has been a Reclamation policy for nearly a half century. Scores of young engineers from foreign lands have received technical training at the bureau's Denver engineering center and at multiple-purpose water development projects in the 17 Western states. Foreign engineers and government officials have frequently made tours of inspection and utilized the bureau laboratory facilities for testing and research for projects in their own lands.

Indian trainees have far outnumbered all others. Khosla and his assistant, Shri Kanwar Sain, chief designing engineer, spent eight months in 1941 investigating bureau financing and water laws. They returned to India and incorporated many U. S. Reclamation practices into Indian work.

• **Tests cited**—Early this year, tests conducted by the bureau for the Indian government are said by reclamation commissioner Michael W. Straus, to have resulted in a saving of 900,000 cu yd of concrete or $10 million in the cost of what is projected as the world's highest dam, the 785-ft. Kosi dam near India's northern border. The tests cost little more than half of the $30,000 advanced by the Indian government for the work.

India already is the biggest irrigation nation in the world. During the centuries she has put 50 million acres under ditch—twice the area of all the irrigated land in the U. S.

• **More ahead**—Her present ten-year program—to be completed in 1955-56—will add 10 million acres to India's total. But the program goes beyond irrigation alone. In line with modern concepts, it is a multi-purpose program, embracing flood control, electric power and navigation, along with irrigation. (See articles in ENR Mar 1, 1951, p. 32; May 24, 1951, p. 33 and June 7, 1951, p. 33.)

The first ten-year phase of India's long-range plans for river development will bring in 1.5 million kw. of hydroelectric energy—not much by U. S. standards, but a tremendous increase for India.

India has a huge potential in hydroelectric power. Her river development work is programmed to continue long after the initial program is completed. Starting on the second phase about 1955-56, India plans to add each year one million acres of irrigated land and 300,000 kw of hydro power. By 1960-61, the rate of increase in electrical energy may step up to 500,000 kw a year.

'Eager Beaver' project

A joint U. S. Army-Canadian engineer operation dubbed "Eager Beaver" will undertake construction of emergency air strips on frozen lake surfaces and on shifty muskeg in Canada's Yukon Territory this winter.

About 300 U. S. and 135 Canadian engineers will participate in the six month long combined exercise to begin Jan. 15 near Kluane Lake, 130 miles north of Whitehorse. Near the end of next month, troops will undergo advance winter indoctrination—U. S. Engineers at Camp Carson, Colo. and the Canadians at Wainwright, Alberta.

Blanks leaves Reclamation for industry position

DENVER—Robert F. Blanks who organized and developed the extensive research facilities of the U. S. Bureau of Reclamation resigned Oct. 8 to accept the position of vice president and general manager of Great Western Aggregates Inc., Denver, a subsidiary of the Ideal Cement Co.

Mr. Blanks joined the Bureau in 1930 to work on the early designs for Boulder Dam, but within a year was assigned the task or organizing a central research laboratory. At the time of his resignation he was head of the Bureau's Research and Geology Division.

A civil engineering graduate of Kansas State College in 1924, he worked on irrigation and hydraulic projects in the Northwest, and was office engineer for the Corps of Engineers in Seattle just prior to going with the Bureau of Reclamation. Mr. Blanks is a past president of the American Concrete Institute.

Great Western Aggregates, Inc., was formed in 1950 by Ideal Cement Co., to conduct research into aggregates of all kinds.

Ohio industrial plant tries prestressed beams

VERMILION, OHIO—Use of 56-foot prestressed concrete beams in an industrial building is being made in a 62′ x 202′ addition to F. W. Wakefield plant here. Contractors for the job are the Austin Co.

Specifications of the beams are: span—center to center of bearing at supports is 56′ x 3″; beam depth—40″; top flange—30″ wide, 5″ thick; web—6″ thick, widening to 12″; design load—25,000 lb at 18′ 3″ from each support.

The Wakefield Co. is inviting architects, engineers and industrialists to observe the castings of the concrete beams and their prestressing and to inspect the completed addition.

MORE CEMENT FOR THE SOUTH—Production will start this month at the Marquette Cement Manufacturing Co.'s new 1,000,000-bbl-per-year plant at Brandon, Miss. First cement mill to be built at Mississippi, it will serve that state, Louisiana and southeastern Arkansas.

Heavy construction plans announced

The tempo of expansion continued this week with further announcements by many firms of extensive construction plans. Among the more important are:

• **Reynolds Metals Co.**—Plans to expand facilities at Jones Mills, Ark., or build an entirely new plant at a cost of $75 million, according to a letter of intent granted by the General Services Administration for construction which will increase aluminum production by 60,000 tons annually.

• **Granite City Steel Co.**—Has started work (Rust Engineering & Co.) on construction of three new open hearth furnaces, a blooming mill, three new slab heating furnaces, and alterations to the present strip mill at the Granite City, Ill. plant.

• **Esso Standard Oil Co.**—Plans a $35 million expansion to enlarge the capacity of their Baton Rouge, La., refinery to 30,000 barrels. A major expansion of chemical operations is also planned.

• **Gulf Oil Corp.**—Announced construction to cost in excess of $10 million to increase their Philadelphia refinery's capacity by 75%. Work will begin around November 1. According to S. A. Swensrud, company president, the project will include two new refinery units that will be the largest of their kind ever to have been constructed.

• **Duke Power Co.**—Announced plans for construction of an addition to its Buck steam electric generating plant on the Yadkin River near Salisbury, N. C., which, together with transmission lines, is expected to cost more than $30 million. The fifth and largest plant constructed by Duke since the war, with additional distribution facilities, it will involve an expenditure of $240 million by 1954.

• **Aluminum Company of America**—Announced tentative plans to enlarge its rod and bar aluminum mill at Vancouver, Wash., for the manufacture of door an window frames. If the war situation does not further effect plans, the new plant may be operating by 1954 at a cost ranging between $20 million and $60 million.

• **Wisconsin-Michigan Power Co.**—Was granted a 50-year license to build and operate a hydroelectric project on the Michigamme River in Iron county, Mich.

Known as the Michigamme Falls Development, the project will include a dam about 1,390 ft long, a reservoir of 5,650 acres and two power units, each containing 6,500 horsepower turbine and a 4,500-kw generator. The dam will be built directly upstream from the mouth of the Brule River, and the project must be completed by the end of 1952.

• **Shell Oil Co.**—Plans to seek government approval for a project to enlarge and improve their Wood River, Ill., refinery at a cost between $12.5 million and $15 million. The project, when completed, will increase the refinery's output to between 165,000 and 175,000 barrels a day.

• **Rome Kraft Co.**—Awarded Maxon Construction Co. the contract for construction of its $25 million container board mill at Rome, Ga.

• **Virginia Electric & Power Co.**—Announced plans to build a $27 million hydroelectric power plant on the Roanoke River near Gaston, N. C. The project has been approved by the Federal Power Commission, but was delayed in litigation which was brought by the Interior Department.

The company has also filed with the FPC for a license to build a $27-million hydroelectric project on the Roanoke River below Buggs Island Dam now under construction by the Corps of Engineers. It is called the Gaston project.

• **U. S. Army Engineers**—Announced a low bid of $5,873,781 was submitted for construction of the main Isabella Dam on the Kern River in Southern California from a joint venture by Macco Corp., Morrison-Knudsen, and the River Constr. Corp. headquartered at Paramount, Calif. The contract also will include completion of an auxiliary dam across Hot Springs Valley.

• **Puget Sound Pulp & Timber Co.**—Has announced clearing of the site for a $5-million pulp mill near Ketchikan, Alaska, will begin this fall with actual construction to start in the spring. The mill, Alaska's first of that type, will be a joint venture of Puget Pulp and the American Viscose Corp.

• **Pend Oreille Public Utilities District**—Has asked the Federal Power Commission for a license to build its $16-million Box Canyon hydroelectric project on the Pend Oreille River. The development calls for a dam 260-ft long which will back up a reservoir extending 55 mi upstream. It is designed to produce 15,000 kw.

Money bill for new bases nears final approval

An appropriation bill for $4,428,357,970 to finance the nation's greatest military construction program has been passed by both houses of Congress and sent to President Truman for signature.

Included in this measure is $12 million for the controversial airport improvements at Grand View, Mo., near the family farm of President Truman. Other provisions call for the building of hundreds of barracks, training facilities, airbases and other installations here and overseas.

Contractor suspended

The National Production Authority this week cut off all priorities and allocation aid from the Delaware Avenue Holding Corp., Columbus, Ohio for 90 days for violation of building contracts in the construction of a Buffalo, N. Y. warehouse and office building.

Company officials admitted using 22 tons of steel in the project after they had been permitted to use only wood beams and masonry, NPA said. The order denies the firm use of controlled materials.

Sanitary engineering group told

Additional steel allotments for water and wastes works construction sought

Arthur J. Fox, Jr.
Assistant Editor

ST. PAUL, MINN.—Steel allotments for water and waste construction in the first quarter of 1952 are tentatively set at 150,000 tons (compared to 160,000 tons for the fourth quarter) but the Water Resources Division of the National Production Authority is asking an additional 128,000 tons.

This was the word G. E. Arnold, new claimant agency boss, brought to the 700 registrants at last week's meeting here of the Federation of Sewage and Industrial Wastes Associations.

In his first such statement since leaving directorship of San Diego's water department, he outlined the difficult job of planning and allocation to be done, and praised Harvey Howe for organizing the work. He asked cooperation and urged economics of design, citing prestressed concrete as an example.

Mr. Arnold, formerly active in stream pollution abatement work of California, stressed his present predicament in that regard by stating: "Eighteen communities in the New York area are under court order to abate pollution. They just can't do it," materials conditions being what they are.

• **Policy on pollution**—Looking at the pollution picture in its broad aspect—not in the confines of today's materials situation—Louis R. Howson, Chicago consultant, discussed national policy for the group.

Pollution conditions in some areas are as bad as they are because of a feeling that when they get bad enough, the "Great White Father will put up part of the money" to correct them, he stated. It is the pollutors themselves who should pay the cost of pollution abatement, argued Mr. Howson, and through the lowest level of government which is found praticable.

Two-thirds of our 90 million urban population now have benefit of some kind of sewage treatment, and for "cigarette money" (one cent per capita per day) the remainder could amortize and operate the municipal plants still needed, he emphasized. Mr. Howson called present pollution controls generally adequate, but cited needs for education of the public and research by industry as additional necessary measures.

• **Industry talks**—L. A. Danse, supervisor of materials and processes for General Motors, told the group that industry wants to show the public it recognizes its place in the pollution abatement picture.

Citing emulsions as a No. 1 waste problem, Danse also had this to say about cyanide wastes: "We suspect that symptoms of slow, cumulative, cyanide poisoning may be mistaken for polio. We want the researchers to check that one."

• **What price disposal?**—Sixty-nine percent of the nation's industries dump wastes into municipal sewage works. What then is a fair sewage service charge?

Fundamental considerations in setting fair charges for industrial wastes have been lost sight of, said G. J. Schroepfer, University of Minnesota. Then he presented and explained by example a rate-fixing procedure that is between the two extremes charging against either use or property. The procedure is that worked out by a joint committee of 24 members (of ASCE and the American Bar Association plus representatives of six other organizations including the Federation).

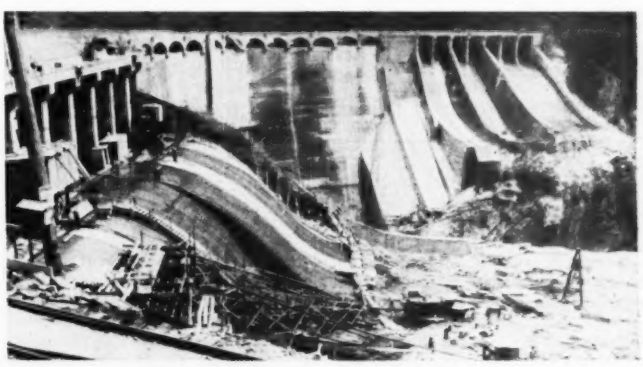
Very briefly: The procedure proportions charges for fixed operation and maintenance costs of sewerage against property and users: users' share of individual cost items is in turn proportioned against volume, suspended solids and bod as these measures affect cost.

• **Advances in the art**—Concentration and handling of raw sludge, as accomplished in pilot plant operations of Allegheny County, Pennsylvania sanitary authority, was described by John F. Laboon. (For description of Laboon's process see last week's ENR.) Discussor Frank Flood of Metcalf & Eddy called the process "an important development, a new tool."

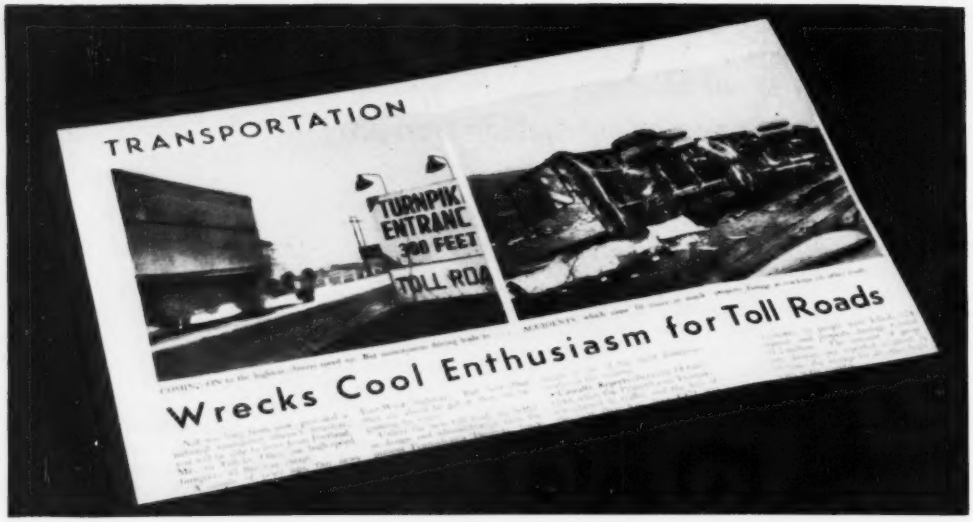
In discussion of pilot plant operations on phenol destruction by chlorine (ENR Aug. 16, p. 43) A. E. Griffin of Wallace & Tiernan referred to the first commercial installation of this process—at a rubber plant in Butler, N. J.

Further, on industrial wastes, in a program generously balanced for industrial interests, operation of evaporation facilities was discussed. Descriptions were given of (1) U. S. developed subsurface gas-burners made of graphite for evaporation of liquid wastes without heat-exchanger corrosion problems and (2) Swedish heat exchange units that convert, so that metal surfaces are alternately exposed to the corrosive waste, then to the cleaning action of the steam used for heating. This idea is being transplanted to Wisconsin pulp mills for work on sulphite liquor disposal—today's big pulp waste problem which is given, by some, just 10 years to live.

Newly elected officers of the federation are reported elsewhere in this issue (see cover). Awards will be listed in a subsequent issue. The federation will meet next year in New York City, Oct. 6-9.



SPILLWAY SLOPES PAVED AT DIABLO DAM—When Diablo Dam on the Skagit River in Washington was built about 20 years ago, little provision was made for protecting the rock below the spillways from erosion, probably as an economy measure. Since then some erosion has occurred. As a result the Seattle Light Department recently let a $2-million contract to the Morrison-Knudsen Co. for sloping aprons that would discharge flood flows at rock level, for grouting the abutment rock and for the new buttress block shown at the far side of the gorge. Diablo Dam is 389 ft high, being the highest in the world when built.



Are toll highways accident breeders?

V. T. Boughton
Associate Editor
Engineering News-Record

ARE highways that have been designed to facilitate fast travel, free of the common causes of delay and accidents, actually breeders of accidents? Has elimination of all crossings at grade, all traffic lights, sharp curves, short sight distances and steep grades created a different type of accident condition potentially more dangerous than those found on normal highways?

These questions are raised by the high accident rate on the Pennsylvania Turnpike—949 accidents involving 1,641 vehicles last year—which has been widely publicized in daily newspapers and has been the subject of comment in special articles in the New York Times, Philadelphia Inquirer, Pittsburgh Press, and Business Week.

What gives the accident record added seriousness is the fact that the fatalities are high—having risen in 1950 to above the average for all rural highways in the United States—and evidence that the severity of accidents is far above comparable national figures. Because of these conditions, one large operator of trucks over the turnpike—Shirks Motor Express Corp. of Lancaster, Pa.,—took its trucks off that highway in March, 1950, and now is operating all but a few rented trucks over parallel roads.

Figures compiled by the Pennsylvania Turnpike Safety Committee—an organization set up in 1949 by users of the highway to seek means for reducing accidents—give the average property damage per accident as five times the national average. The Business Week report set the total property damage since the turnpike was opened in October, 1940, at $4,500,000.

• **A qualified answer**—The answer to questions raised in the opening paragraphs appears to be a qualified "No." A more positive answer cannot be made until much more rigorous control is exercised over traffic on the Pennsylvania turnpike or until experience is gained in operating the New Jersey and Ohio turnpikes. The best evidence would be produced by a sharp cut in the top speeds permitted both trucks and passenger cars on the Penn Turnpike and enforcement by an adequate police patrol.

Drowsiness induced by the monotony of driving on a road free of physical hazards frequently is cited as the cause of most accidents, but the truck operators believe that the majority of accidents that result in death and high property damages are accidents due to speeds above the driver's capacity to control his vehicle properly. At such high speeds a driver loses his perception of distance, they conclude.

High speeds and lack of adequate police control over traffic on the turnpike was declared to be the chief reason for that highway's unfavorable accident record at a conference of users of the highway that the Turnpike Commission held in Harrisburg in September (ENR Sept. 20, p28).

From a designer's viewpoint, it is of interest to note that no significant questions relating to the design of the Pennsylvania Turnpike as it might affect the accident record came up at that meeting, and in no instance was faulty design cited as a contributing factor. The few suggestions for minor improvements in design that came up will be outlined later.

• **Speed, not drowsiness**—Supporting the conclusion that speed rather than drowsiness or defects in design is a major factor in producing the high accident record is the fatal accident that clinched the decision of the Shirks Motor Express Co. to take its trucks off the turnpike until there is better control of speed. The driver of that truck had just had his four-hour rest period and his breakfast. He was refreshed and alert, yet he entered the conspicuously posted 35-mile speed zone approaching a tunnel portal and crashed into a truck at the end of a line of trucks stopped at the tunnel entrance. From the condition of his truck it was apparent that he had started to turn out but had misjudged his closeness to the truck ahead and could not clear its rear end in time.

The condition of passenger cars

involved in accidents indicates that their drivers also failed to react quickly enough to avoid an accident at the speed at which they were traveling.

• **Accident severity high**—Harry T. Waters, president of the Shirks organization, says that the high frequency of accidents was not what caused his company to take its trucks off the turnpike. It was the seriousness of the accidents. "When we had an accident, it was a BAD ONE," he said.

When Mr. Waters told his drivers that he planned to take the company's trucks off the turnpike, he found most of them in favor of that change. The only time since then that they have raised question about it was last winter when the parallel route was tied up by storm and the turnpike was open.

This coming winter, if driving conditions get bad on the parallel routes, Mr. Waters plans to let his men vote on whether or not to use the turnpike.

Harry E. Willis, assistant to Mr. Waters, states that the cost of maintaining the company's equipment is higher now than when they were operating on the turnpike, but that these costs are more than offset by the reduction in serious accidents.

• **Driving conditions studied**—As a check on driving conditions, Mr. Waters put three patrol cars on the turnpike before taking the company's trucks off that route. They found that speeds in excess of the theoretical maximum of 50 mph for large trucks were common and that these high speeds generally were the major contributing factor in accidents.

Failure to maintain safe spacing between vehicles was the second most important factor. Control over traffic by the turnpike police was found to be inadequate.

• **Truck speeds cut slightly**—As part of its current program to cut the accident toll on the turnpike, the commission recently set an upper speed limit of 50 mph for all commercial vehicles. In theory, this cut would only affect the speeds of buses and light or medium-weight trucks. But if enforced rigidly it would affect all trucks, for it is common knowledge that the big trucks mostly travel at speeds above 50 mph. (See Fig 1).

DEATHS IN TRAFFIC ACCIDENTS

(Number per 100-million vehicle-miles)

Year	Pennsylvania Turnpike	Rural Pennsylvania	Rural United States
1941	10.7	14.7	15.2
1942	10.9	13.7	12.9
1943	8.0	14.5	13.6
1944	14.5	14.1	13.5
1945	11.2	14.1	13.6
1946	9.8	13.5	12.3
1947	5.8	*	11.4
1948	7.3		10.9
1949	10.0		10.2
1950	12.4		10.5

* Figures for 1947-1950 not available.

When the turnpike was opened, the state legislature authorized a 20-mph increase in speeds on that new highway over the limits set for other highways in the state. Those limits are:

	State highways	Turnpike
Passenger vehicles	50	70
Light trucks	40	60
Medium trucks	35	55
Heavy trucks	30	50

This was done on the assumption that vehicles could operate safely at those higher speeds on the turnpike because of its superior design features. Following opening of the turnpike there developed a widespread belief that no limit had been placed on speed on the turnpike. That belief still is widely held.

Lack of an upper limit is emphatically denied by the turnpike staff, and they cite numerous arrests for speeding to support their denial. One user of the turnpike summed up a more general opinion when he said: "They really must have been traveling to be arrested."

Reduction of the top speed for passenger vehicles to 60 mph and for heavy trucks to 45 mph was recommended to the commission by the Pennsylvania Turnpike Safety Committee. That committee also characterized the present police force of 32 (only 8 of whom are available for patrol duty on the 270-mile turnpike at any one time) as "grossly inadequate."

This recommendation was restated at the Sept. 6-7 conference in Harrisburg by W. Robert Smith, chairman of the committee, and was endorsed by other truck operators and representatives of the truck-drivers' unions.

• **More warnings for users**—Flashing signs are now being put up by the commission at all entrances to tell users what the top speed limits are. Under study as part of the commission's new safety program is the installation of signals along the highway to divide it into speed zones about two miles long. A few such signals have been put up near Harrisburg (Fig. 3) to test drivers' reactions to them.

Hearty approval of the warning signs at turnpike entrances was given at the users conference by both truck operators and truck drivers. The latter advocated an active and continuing educational program as the best way to reduce accidents on the turnpike.

• **Effect of design on safety**—Some critics of the Pennsylvania Turnpike have blamed its high accident record in part on its design, especially its flat and narrow (10-ft) median zone, and lack of any shoulder along the median zone. Cars out of control cross the zone, they state, and cars overtaking and passing a string of slower cars frequently are forced into the median zone by one of the cars in the string also starting a passing movement.

Gerard B. Gilbert, assistant to the chairman of the Turnpike Commission, states that its records do not support this criticism. And he points out that a driver who starts to pass a string of slower cars at such a high rate of speed that he cannot avoid being forced into the median by one of the slower cars starting a passing movement, is himself guilty of reckless driving. If an accident results, Mr. Gilbert says, the fault is the driver's, not the design of the turnpike.

The same applies to accidents resulting from U-turns. Making U-turns is forbidden on the turnpike except to the police, Mr. Gilbert says,

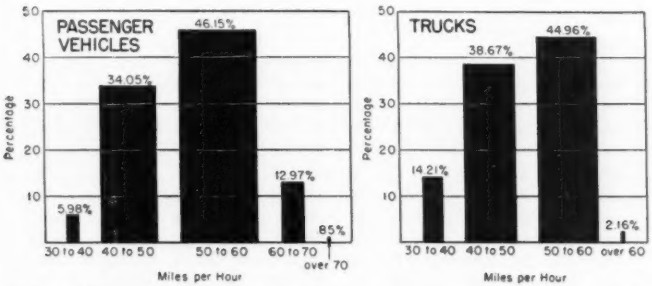


FIG. 1. VEHICLE-SPEED GROUPS on the Pennsylvania Turnpike as checked at various points by a radar speed-recording device. Nearly 45 percent of the trucks travel in the 50-60-mph bracket.

and if a driver makes a U-turn instead of proceeding to the next interchange to turn back, he is the cause of any accident that may happen.

Painting a 4-in. wide white line, surfaced with reflective material, along the edge of the pavement next to the median zone was recommended by the Turnpike Safety Committee. The committee noted that many accidents occur while cars are passing, and said that this would be a guide to drivers while passing at high speed.

That recommendation has not yet been adopted by the commission, but on the newly opened section of the western extension of the turnpike the commission has painted the white center line 12 in. to the right of the center joint of the pavement. This has the effect of adding about 18 in. to the apparent width of the passing zone as the white line normally is painted to the left of the joint.

In this connection it is of interest to note that on the New York State Thruway the passing lane is made 13 ft. wide instead of 12, as on Pennsylvania Turnpike.

Both the New Jersey Turnpike and the Ohio Turnpike are to have shoulders along the edge of the passing lane where it adjoins the median zone as a protection for passing drivers who may be forced off the pavement due to the start of a passing movement by a vehicle in the line he is attempting to pass.

• **Wider medians favored**—Because there have been head on collision on the Pennsylvania Turnpike due to cars crossing the flat, 10-ft wide median zone into opposing traffic lanes, most of the newer toll highways are being built with wider median zones. An exception is the northern end of the New Jersey Turnpike where it passes through the densely built up metropolitan district.

Because the medians on the Pennsylvania Turnpike are flat and narrow there have been several fatal accidents resulting from a driver stopping his car on the outer shoulder of the eastbound (or westbound) lanes and crossing all four lanes and the median on foot to reach a restaurant or service station on the outside of the opposing lanes.

It was this type of accident that was put forward as one of the arguments in favor of reversing the position of the eastbound and westbound lanes of the proposed Ohio Turnpike, putting all service stations, restaurants and maintenance shops in a widened median zone (ENR July 26, p32). That proposal was turned down recently by the Ohio Turnpike Commission for various reasons.

That a wider median zone would stop this practice appears improbable, unless the median was densely planted or fenced. The Pennsylvania Commission is attempting to eliminate this source of accidents by erecting from 1,500 to 2,000 ft of substantial fence in the center of the median at the service stations and restaurants. It already has put up signs on lanes opposite all stations telling how far it is to the next service point on that side.

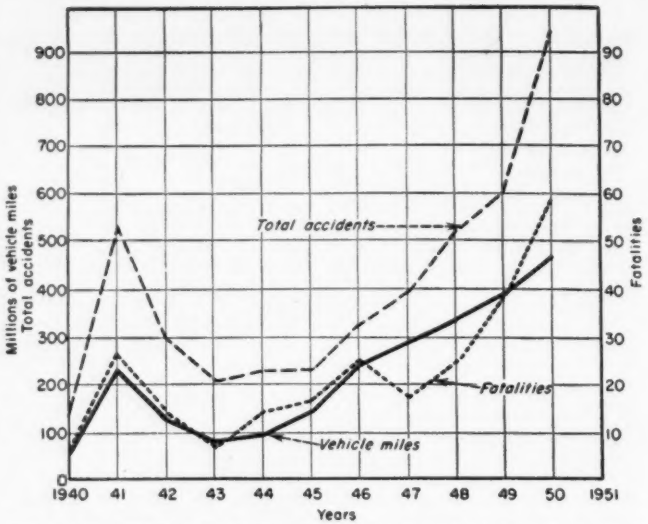


FIG 2—ACCIDENTS AND FATALITIES on the Pennsylvania Turnpike in recent years have been increasing at a faster rate than the increase in vehicle miles. The high peak in 1941 never has been explained to everyones satisfaction.

• **Loss of alertness by drivers**—As noted earlier, one of the most frequently cited causes for accidents on the Penn Turnpike, and one concerning which there is the least definite information, is loss of alertness by drivers due to the monotony of driving mile after mile with no traffic lights, no intersections, no sharp curves or steep grade requiring some action on the part of the driver. Apparently this monotony, in addition to being a contributing factor to the accident toll, is one reason why some truck operating companies report that their drivers don't like driving on the turnpike although driving conditions there were expected to be much better than on other highways.

Designers of newer limited-access highways have given considerable

TRAFFIC AND ANNUAL ACCIDENT FIGURES ON PENNSYLVANIA TURNPIKE

Oct. 1, 1940, to Dec. 31, 1950

YEAR	NUMBER OF VEHICLES IN THOUSANDS			VEHICLE MILEAGE IN MILLIONS			VEHICLES INVOLVED IN ACCIDENTS			TOTAL ACCIDENTS	FATAL ACCIDENTS	FATALITIES
	P.C.	Comm.	Total	P.C.	Comm.	Total	P.C.	Comm.	Total			
1940	560	70	640	47	6	53	189	30	219	138	5	5
1941	2,280	330	2,630	208	33	242	579	188	775	529	20	26
1942	1,140	360	1,520	88	38	129	252	186	444	298	12	14
1943	640	350	1,000	49	38	87	136	155	252	212	7	7
1944	780	350	1,140	59	37	97	163	181	349	232	12	14
1945	1,210	370	1,600	103	38	143	225	169	395	238	12	16
1946	2,100	470	2,600	192	49	245	340	156	500	331	14	24
1947	2,494	575	3,100	224	65	292	397	232	634	399	13	17
1948	2,728	798	3,564	247	91	342	493	325	837	535	21	25
1949	3,084	928	4,051	271	116	391	590	378	976	609	28	39
1950	3,532	1,206	4,774	329	143	476	933	662	1,641	949	42	59
TOTALS	20,548	5,807	26,619	1,817	654	2,497	4,297	2,662	7,022	4,470	186	246

thought to means for overcoming this effect. On the New Jersey Turnpike, long tangents have been purposely avoided. The New Jersey Commission also gave serious consideration to using concrete and bituminous paving on alternate sections of the highway to give drivers a frequent change in driving conditions.

Consulting engineers for the Ohio Turnpike have recommended that the distance between east and westbound traffic lanes be varied frequently and that the levels of the lanes in relation to each other be varied where the topography permits, as is done on the Taconic Parkway in New York State.

At the users conference in Harrisburg it was suggested that variety in signs along the highway would help, especially if some ingenuity is applied to finding reasons for putting up more signs such as additional cautionary signs at points where icing is frequent in winter, or more signs in advance of exits telling names of towns to be reached from those points.

FIG 3–ZONING THE PENN TURNPIKE by the installation of speed-control signals at frequent intervals is under consideration. This picture was taken while one of those signals was being tested during a sudden shower.

• **Speed still the major factor**–If all the physical changes that have been discussed in the foregoing could be made in the Pennsylvania Turnpike it appears probable that the only ones that might produce a material reduction in the accident record are widening the passing lane and adding a shoulder along that lane next to the median. Yet the frequency of passing accidents is not so high as to indicate that such a change would make a material reduction in accident frequency.

Even if it did, there still would remain the question of accident severity, which in the opinion of such well informed men as Edward Gogolin, general manger of the Pennsylvania Motor Truck Association, and the majority of the members of the Pennsylvania Turnpike Safety Committee, is the most serious aspect of the accident situation on what has been widely advertised as "The World's Safest Highway." These men hold that the high fatality rate and high average rate of property damage are much more significant than the accident-frequency rate (which is much lower than the national average) and which forms the basis for the claim that the Penn Turnpike is the world's safest highway. They point out that the frequency rate should be much lower than the national figures because the turnpike has no crossings at grade with other highways or railways, no entering side roads, and is fenced throughout to keep pedestrians off its pavements.

• **More control needed**–From the foregoing it appears logical to conclude that because of the higher average speeds that are possible on limited-access highways there must be more control over the users than is exercised on other highways if accidents are to be kept down; and there must be greater recognition on the part of the regular users of the higher risks that are inherent in higher speeds.

On this latter point, the staff of the Pennsylvania Turnpike Commission is on sound ground in its emphasis on the need for educating users as to the need for *safe driving at all times*. In such a campaign they will have the support of all responsible truck operating organizations and unions of truck drivers. The same will be true on the other long toll turnpikes now under construction.

But educational campaigns that are not backed by strict enforcement of speed limits and safe driving rules will be wasted effort. At the Harrisburg conference the need for more enforcement was stated again and again by representatives of the big trucking companies, insurance companies, truck drivers unions and automobile associations. Only the commission's staff appeared unconvinced that stricter enforcement was the key to greater safety.

• On this point, commissioner Edward N. Jones said in opening the conference: "As to speed, the commission has an open mind. However, it does not believe that reduction of maximum speeds will be followed by a reduction in the number of accidents."

• **An economic question**–Obviously, for the Pennsylvania commission, the demand for better police control and lower top speeds raises serious economic questions. Doubling the police force–as has been proposed–would add a half million dollars to its annual operating budget. Slower speeds would weaken one of the arguments the commission uses in seeking more business for the turnpike, and stricter control over the truck operators who profit most by a quick turnaround could send such operators back to the free highways.

What applies to the Pennsylvania Turnpike will apply with even greater force to the New Jersey and Ohio turnpikes. In New Jersey the much higher costs per mile of its turnpike as compared to the Pennsylvania Turnpike are due in part to design features intended to reduce accidents; and in Ohio an even greater investment in safety features has been proposed.

• **Not accident breeders**–Based on today's limited knowledge, the conclusion appears obvious that limited-access highways, when properly policed, need not be accident breeders. The disconcerting record made by the pioneer in this field–the Pennsylvania Turnpike–is due primarily to failure to appreciate that higher speeds call for more complete traffic control.

GAS DOME AND TRUSS for 70-ft dia floating sludge tank cover were landed on water borne float for erection. Entire cover was assembled while floating on this pontoon assembly. (ENR Staff photos)

Floating sludge tank cover floated during assembly

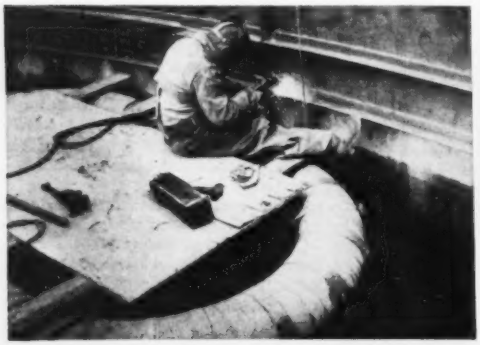
A NEW WRINKLE in erecting floating sludge tank covers has been developed by an Oakland, Calif., firm of steel erectors. Rather than construct falsework for fabrication of the floating covers, they simply support their work on pontoons floating on water in the sludge tanks. This procedure simplifies their work and, in one case, it made use of water that had to be there anyway.

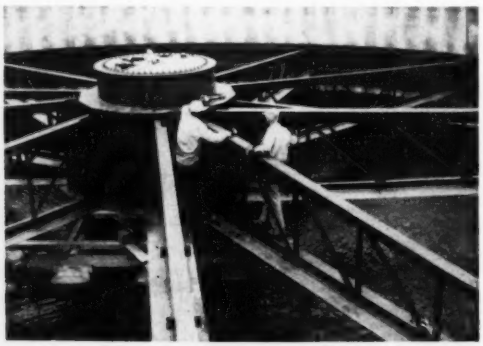
This method was used by Blodgett & Morgart to erect floating covers for six sludge tanks, three at the new Oakland, Calif., treatment plant for the East Bay Municipal Utility District and three for the South San Francisco-San Bruno, Calif., Joint Sewage Disposal Plant. Photos included with this story were all taken at South San Francisco.

Here's how it worked: When the concrete work on the tanks was completed, they were subjected to a static hydraulic test. In the Oakland case, the general contractor had to purchase water from the city for this test and then either waste it or sell it back for industrial purposes only. Further hydraulic load tests were required after fabrication of floating covers so it was a saving to keep the water in the tank.

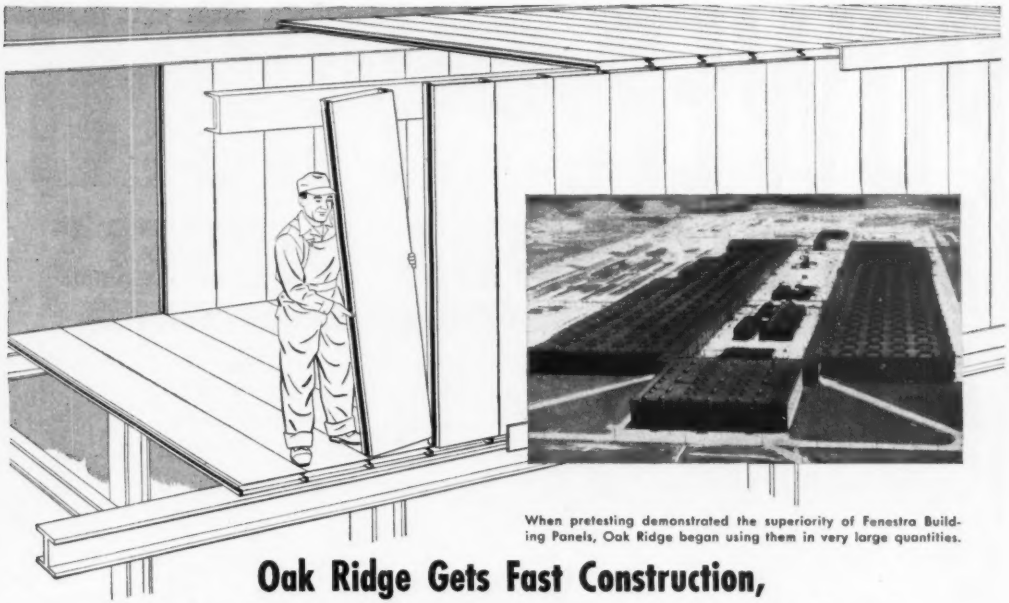
Rim plates were first welded together, encircling the perimeter of the floating cover. This rim rested on corbels that hold the cover when in the down position. Then an assembly of dredger floats was placed in the center of the tank. The first steel (dome and one truss) was rested on this assembly while the truss was bolted to the rim plate. Successive trusses were added until the floating cover had been completely erected.

The process was developed by Newt T. Blodgett, partner and superintendent for the steel erectors. General contractor for the South San Francisco plant was M & K Corp. of San Francisco, for which Cliff Pemberton was general superintendent.





RIM PLATES WERE WELDED as first step in cover assembly. During this period they rested on corbels of the tank's prestressed concrete walls (left). Float sank deep in the water as truss fabrication neared completion (right).



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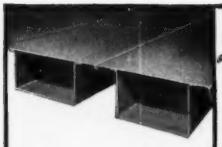
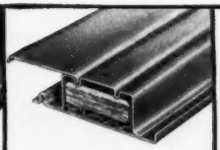
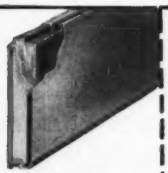


"D" Panels for floors, roofs, ceilings. Standard width 16". Depth 1½" to 7½".



Acoustical "AD" Panels for ceiling-silencer-roof. Width 16". Depth up to 7½".



"C" Insulated Wall Panels. Standard width 16". The depth is 3".

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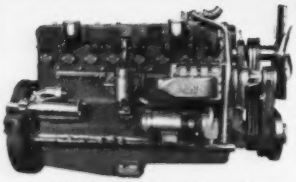
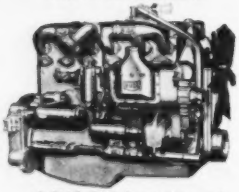
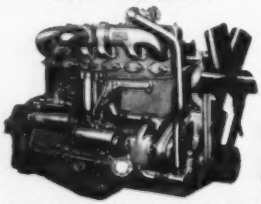


8-DAS-1125 Supercharged
350 HP at 2100 RPM



6-DAS-844 Supercharged
280 HP at 2100 RPM



6-DA-779 185 HP at 2080 RPM

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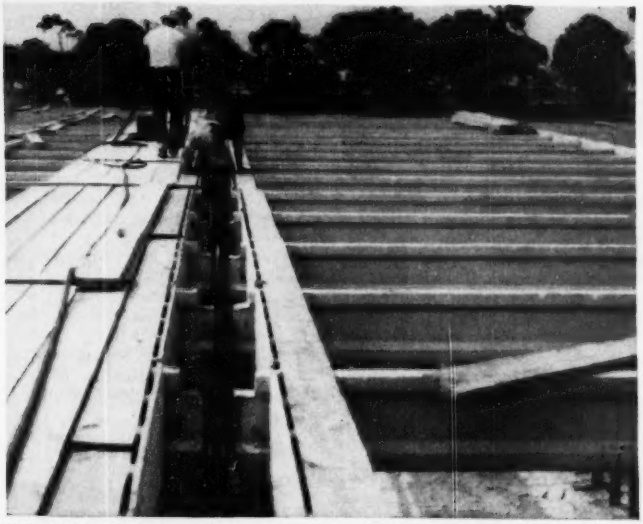
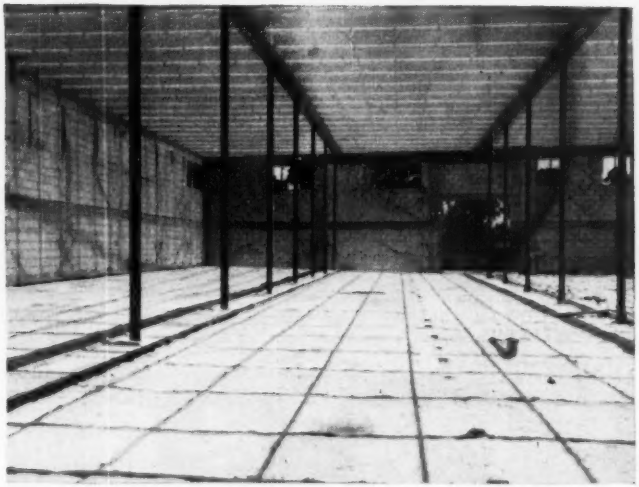


PRECAST JOISTS for roof of one-story Miami building were supported on forms for cast-in-place beams. Joist ends extended through the forms and were encased in the beams. Steel bars in joist ends anchor joists to beams.



BEARING WALLS are made of hollow concrete block. For protection against hurricanes, they are strengthened with reinforced concrete beams and columns. This reinforcement also enables them to resist lateral earth pressure below floor level.

An engineer beats the steel shortage

HAVING CONTRACTED to design a low-cost warehouse and office building for Mayflower Plumbing Supply Co. in Miami, Fla., Jules P. Channing, consulting engineer of Miami Beach, was temporarily stumped when he found he could not get structural steel for the roof framing. He had completed the design in steel, and it looked as if the project might have to be abandoned.

He could keep costs down to some extent by using hollow concrete-block bearing walls, which are braced with reinforced concrete beams and columns, for protection against hurricanes. But conventional reinforced concrete roof framing made the building too expensive.

Channing found a solution in a combination of cast-in-place and precast concrete roof framing. He designed this to support a cast-in-place gypsum roof slab and built-up roofing. Final cost of the warehouse portion of the structure, which is finished with only a cement wash, is $3 per sq ft. The 4,000-sq ft office area, being air conditioned and having finished interior and exterior surfaces, plus an elaborate show room, was more expensive to build. It ran up the total cost of the 29,000-sq ft building to $4 per sq ft—however, still within the owner's price range.

• **Elevated floor**—The building meets the owner's shipping, receiving and storage requirements as well. It is one-story high, with a vertical clearance under the concrete roof beams of 16 to 17 ft. Triangular in form, the building has frontages of 178 and 236 ft on two streets.

A 30x72-ft area is provided under the roof along one of these streets for loading and unloading trucks. Along the third (hypotenuse) side of the structure is a railroad siding, with standing space for three freight cars.

To facilitate the handling of supplies from these cars and trucks, the owner required that the floor of the warehouse be elevated. So earth fill was tamped into place to bring the top of finished floor to 3 ft 8 in. above the top of the siding rails. This made it necessary to design the lower portion of the outer walls of the building as a retaining wall.

• **Walls resist thrust**—Channing had planned to use concrete-block panels reinforced with cast-in-place beams and columns for the upper portion of the exterior wall. He had employed this design before, for a night club built on poor soil (ENR May 12, 1949, p 66), and the building has successfully withstood several hurricanes. It was only natural, then, for him to investigate the possibility that the block wall might serve as a retaining wall.

Calculations indicated that this construction would be adequate; so the blocks were laid from footing to roof. The cast-in-place wall columns are 20 ft apart; 8 x 18-in. in section, they are flush with the wall on inner and outer faces, for maximum storage efficiency.

Cast-in-place 8x12-in. tie beams brace columns and walls at floor and roof level and at midheight. This wall is economical and takes the thrust of the fill adequately, the designer says.

Like the block walls, windows are

divided into small panels to keep the glass spans small, for resistance to hurricane forces.

• **Interior columns**—The type of storage for which the warehouse is to be used does not require any special spacing of interior columns. Hence, for construction economy, these members are spaced 20 ft on centers.

Above floor level, columns are concrete-filled steel pipes; they are supported at floor level by pedestals built up of hollow concrete block. Reinforcing bars were placed in the hollows and the spaces filled with concrete.

The pedestals are doweled to a concrete footing resting on rock just below the surface of the ground. Because of the porous nature of this rock, loose sand had to be removed from the cavities so that adequate bearing could be had for the footings.

• **Low-cost roof**—The pipe columns support 12x20-in. cast-in-place concrete beams. Before these members were poured, the precast joists were erected, their ends protruding into and being supported on the beam forms. When the concrete was placed, the joist ends, with bar anchors attached, were encased in the beams.

Spaced 6 ft apart, the joists are 14-in.-deep I shapes. They are flush top with the beams; thus, the designer saved 14 in. in the height of the building.

In designing the beams, Channing assumed that the joists form part of the compression area. But he deducted the space in the beams occupied by the joists from the total area in computing shear stresses for stirrup design.

Across the tops of the joists, steel tees were placed to support a 3-in. thick cast-in-place gypsum roof. Due to the light weight of this slab, the designer says, a reduction in cost was effected for joists and beams. In addition, the gypsum roof insulates against the tropical sun.

While this type of construction is economical and space-saving, it requires careful workmanship and strict supervision, according to the designer.

Spector & Sons, of Miami, was the general contractor. Construction of the superstructure started in March, 1951, and was completed in September, six months later.

Novel prestress design for office building

A combination of precast and cast-in-place concrete was used to form prestressed beams for the office-building annex to the Colodense, Ltd., factory at Bristol, England.

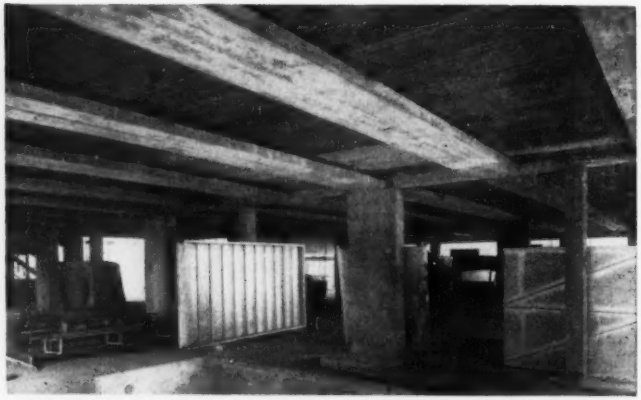
This design enabled the floor thickness to be limited to only 12 in. in 26-ft. 4-in. bays. And it proved to be economical—in fact, much less expensive than an ordinary reinforced concrete beam, according to F. J. Samuely, the consulting engineer on the structure.

The lower portion of each beam—25 in. wide and 4 in. thick—was precast and prestressed. Bonded to the concrete in the center of this section were 155 wires tensioned to 108,000 lb. The wires are only 0.08 in. in diameter. Stirrups also were incorporated and left projecting to tie the precast portion to the cast-in-place upper portion of the beam.

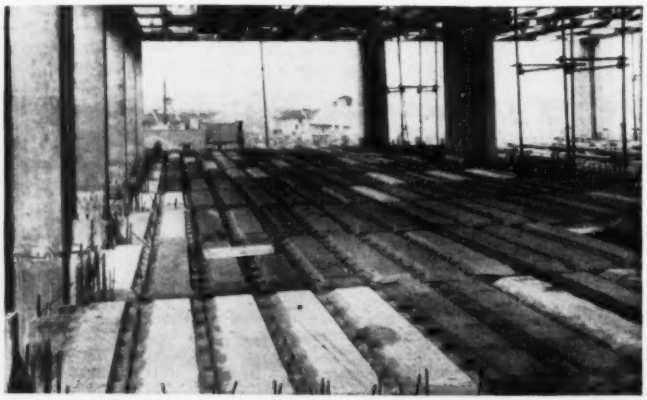
After the precast sections were erected, two precast concrete spacers were placed on top. Next, precast concrete, inverted-channel floor plank were laid between the beams with ends resting on the spacers. Finally, concrete was cast over the plank, not only forming the top of the floor slab, but also the upper portion of the beams.

With the beams constructed in this manner, the normal compression zone and the center are not subjected to precompression. Furthermore, the normal tension zone is given greater precompression than if the full section of each beam were prestressed with the same force.

The prestressed members were made by Concrete Development Co., Ltd. Holland and Hannen and Cubitts, Ltd., was the contractor and E. F. Peat, the architect.



BOTTOM FLANGES of 26-ft floor beams in an office building in Bristol, England, were precast and prestressed. Upper portions were cast in place.



PRECAST CONCRETE floor plank were laid on the prestressed flanges. Then, a concrete covering was placed simultaneously with the beam concrete.

ENGINEERED TYING DEVICES, ANCHORAGES and ACCESSORIES for CONCRETE CONSTRUCTION

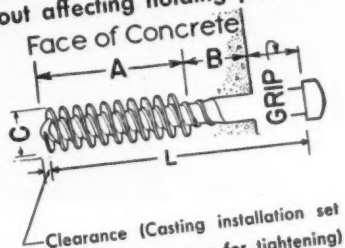
THE RICHMOND SCREW ANCHOR AND BOLT WITH THE THREAD THAT'S CAST IN CONCRETE

SCREW ANCHOR IN PLACE

SCREW ANCHOR BOLT IN PLACE

The Richmond Screw Anchor and Bolt Assembly is a tried and proven device for anchorage to concrete. Bolt is strongly anchored and can be removed and replaced from the cast-in-place flat coil screw anchor without affecting holding power.

SIZE (Dia)	DIMENSION A	B	C
⅜"	1½"	2½"	¾"
½"	2"	3"	⅞"
⅝"	3"	3¼"	1⅛"
¾"	4"	3½"	1¼"
⅞"	5"	3¾"	1⅜"
1"	6"	4"	1½"
1¼"	7"	5½"	2"
1½"	8"	7"	2¼"



Clearance (Casting installation set ½ diameter deeper for tightening)

Tests have proven that Richmond SCREW ANCHORS embedded to specified depths in 2,000-lb. concrete more than develop the full rupturing strength of the ANCHOR BOLT in tension.

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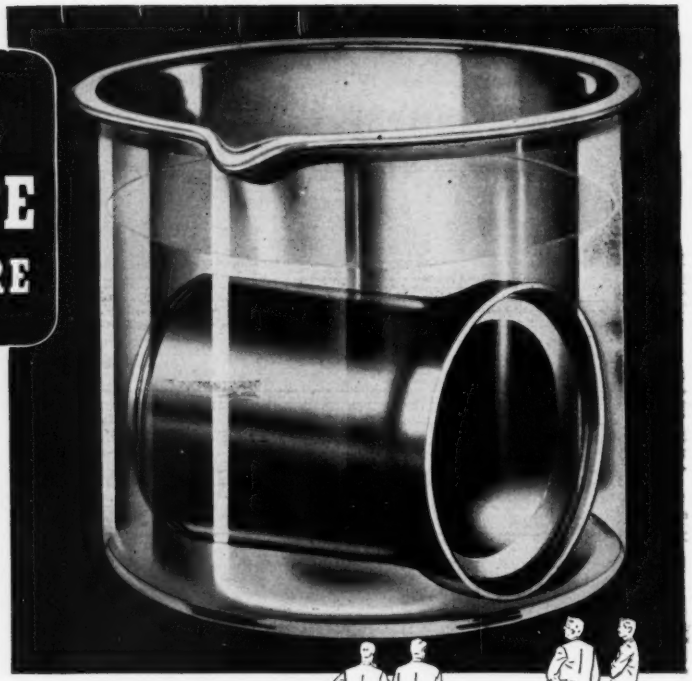

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C-451-1

BIG LOADERS AND DUMP WAGONS are moving 10 cu yd a minute in grading for runway extensions at Cecil Field, Florida.

Strengthening Navy airfields for jets

MASTER JET AIRFIELDS for the Navy are setting the style for jet-age airports. Existing fields are being "beefed up" by extending and recapping runways wherever possible, and at other places, the Navy is building new runways of a different design to accommodate the airplanes of the present and future.

The better Navy, Army and civilian airfields of today are bearing up satisfactorily under limited jet operations at present, but expansion of jet flying —and new planes on the drafting board—call for bigger and sturdier runways where the swift planes have plenty of gliding-in and takeoff range.

A World War II training field at Cecil Field near Jacksonville, Fla., will be turned into one of the Navy master jet fields.

Hurriedly built and commissioned in 1941, there was nothing unusual about Cecil Field. It is located 15 miles inland from the Naval Air Station on the St. Johns River below Jacksonville, on land 65 to 80 ft above sea level. Most of area is flat and in general the soil is a fine sand. Surface drainage was provided for the original field. The new jet runways will go along the ridgeland.

Four runways varying from 4,500 to 5,000 ft in length and 200 ft wide were built in 1941. They were set in the typical crossing pattern, pointing into the prevailing wind directions. A circular mat 1,800 ft in diameter was located in the center of the training field for light, primary training planes.

Both the runways and circular mat were built by thoroughly compacting 6 in. of limestone rock on the sand base, after which the limestone was given a triple bituminous surface treatment of asphalt and slag.

Runways were built for 15,000-lb loads but subsequently were evaluated as being able to handle 30,000 lb at 85-lb tire pressure. The heaviest planes using the field were 19,000 pound TBM bombers.

• **Jets do little damage**—During the past two years, Cecil Field has been used by two groups of Navy jet fighters. The existing runways have held up well. Only twice has a runway been damaged—and each time it was due to a bad landing in which the plane suffered worse damage than the paving.

The original runway lengths are not sufficient for the present jet fighters. Hence the new runways for the master jet will go out to 8,000 ft—with provisions for possible future extension to 10,000 ft. The original field was designed for a 40-1 glide angle, and this factor, primarily in the takeoff requirement, has bothered the jet pilots even more than the runway lengths. The master jet field will have 50-1 glide angles.

In addition to the runways, the existing field has two 200x253-ft hangars and a concrete apron 1,700x900 ft, which is 6 in. thick. Aprons will be enlarged as part of the new construction, but the dimensions have not yet been firmly established.

To open the way for construction of the master jet field, the Navy is purchasing additional acreage around the field. This land is being cleared 750 ft from the centerline of each runway and off the ends for a distance sufficient to give the 50-1 glide angle.

• **New load limits**—Criteria established by the Navy—for present and future planes—are a 20,000-lb wheel load at 250-lb tire pressure and/or 50,000-lb wheel loads at 150-lb tire pressure.

The surface paving must withstand short blasts of temperature up to hundreds of degrees Fahrenheit in the blast cone of present planes. Blast temperatures for future planes are not yet known and may be greater. This heat factor is important only in the warm-up and taxi areas when the plane is moving slowly.

Ultimate planning calls for four new runways to be built. Construction operations have been scheduled so that it will not be necessary to

BIG COMPACTORS pulled by tractors provide limerock bases with a density of 95% of the theoretical maximum.

close down the field at any time. The first pair of runways will be dual north-south strips, 8,000 ft long and 700 ft apart, each 200 feet wide, with accompanying taxiways. Later, dual east-west runways are planned crossing the first pair of duals near midfield.

The duals will enable planes to take off and land simultaneously, greatly increasing the ability of the field to handle a large volume of traffic, and will eliminate the need for planes with low jet fuel supplies to wait long periods to land.

The ground 150 ft out from each runway will be stabilized to 90% of modified density with two inches of limerock incorporated with six inches of soil, compacted and planted with carpet grass or Bermuda grass.

• **Concrete aprons and taxiways**—Aprons and taxiways and the end 1,000 ft of runways will be built of concrete on a stabilized base consisting of a 2-in. admix of limerock with 6 inches of soil. The paving will be 10 in. of concrete designed for 4,000-psi compression strength, reinforced with mesh and equipped with load-transfer bars at the joints.

The outside longitudinal tongue and groove joints on all concrete pavement will be provided with tie bars to reduce displacement of the slab.

Runways will be built on sand compacted to 90% of AASHO modified standard density with tractors and rubber-tired rollers; 6 in. of base stabilized to 90 percent with a 2 to 1 mixture of sand and limerock; 9 in. of limerock compacted to 95 percent density, topped with 3 in. of asphaltic concrete.

One of the east-west dual runways will be for instrument landing with GCA (ground-control-approach) and standard high intensity lighting.

Master jet operations will require general housing and administrative facilities for several thousand people and increased fuel storage and handling. A new type of plane fueling station is proposed for installation on the apron.

Due to high rate of consumption of jets, the fuel storage tanks will be increased many fold, possibly with earth covers.

An 8-in. pipeline will be laid 15 miles to Naval Air Station, Jacksonville, which receives its supply of fuel by barge from the Navy bulk fuel terminal located on the St. Johns River downstream from Jacksonville.

• **Part of an expansion program**—Location of the master jet facility at Cecil Field is linked with expansion of the Jacksonville Naval Air Station, the bulk-fuel terminal, and construction of an aircraft-carrier base in Ribault Basin at Mayport, just inside the jetties at the mouth of the St. Johns River.

After the Navy had formulated its general plans for Cecil Field in the Bureau of Aeronautics and Bureau of Yards and Docks, under the immediate supervision of Comdr. E. J. Peltier (CEC), USN, who is officer in charge of construction at NAS Jacksonville, it contracted with Airways Engineering Corp. of Washington to draw the master plan.

Following completion of the master plan, BuDocks and BuAer made detailed studies of the layout. Upon approval by both of these bureaus, the Eustis Engineering Co. of New Orleans was employed to make a study of soil conditions, evaluate local materials and give several sources of supply in order to obtain competitive bidding on the work.

Eustis Engineering made a soil profile of the area, recommended thicknesses of runway and apron paving and reviewed and modified earlier recommendations. In cooperation with the Navy, the firm had actual test pavements laid on an area 60x30 ft, using a 6-in., 9-in., and 16-in. limerock base, from which design criteria were evolved by BuDocks.

Robert and Company Associates of Atlanta prepared the final set of plans and specifications for the airfield and pipeline construction, and Lockwood and Andrews Co. of Houston designed the new fuel storage facilities.

Bids for paving runways at Cecil Field were opened in Charleston, S. C., by Capt. Walter Eckberg, public works officer of the Sixth Naval District, and the award was made by BuDocks to L. G. Defelice and Son of North Haven, Conn. Bids ranged from the low of $8,278,891 to a high of $9,514,449. They were submitted on the basis of constructing three runways on the initial contract.

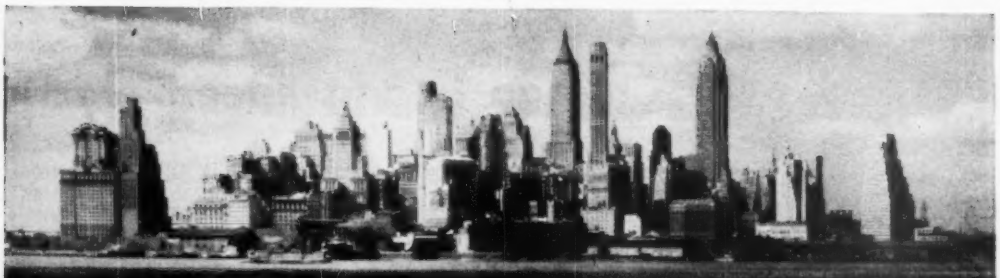
The low bid exceeded the funds that were immediately available, hence one east-west runway and part of the runway work was eliminated from the contract, which was awarded to the firm of L. G. Defelice and Son for $7,140,000.

Ten-year contract ends Pacific power dispute

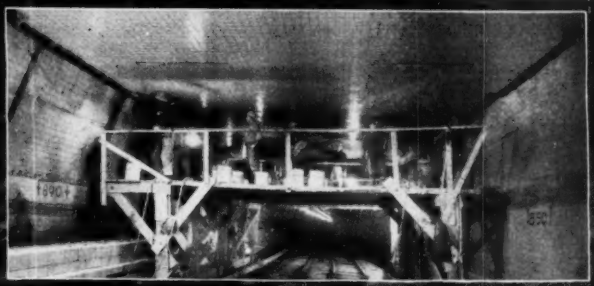
The Bureau of Reclamation and Pacific Gas & Electric Co., San Francisco, have drawn up a ten year contract for sale of Central Valley Project power to the California utility, ending a long controversy between the government agency and the private utility. Up to now CVP has sold power to PG&E under a day-to-day agreement reached in 1949.

The agreement establishes 300,000 kw as dependable capacity for the CVP system; PG&E reserves the right to purchase the remaining dependable capacity which CVP does not require for project operation or for sale to its own customers.

The new contract supplements a recently signed agreement with PG&E under which PG&E transmission facilities are used to deliver CVP power to the project's customers. The utility will also purchase a large proportion of CVP power on a non-dependable basis. California Public Utilities Commission must approve the contract before it can go into effect.



13 Fathoms under the East River



Above photo shows "WATERPLUG Crew" at work, in New York City's famous Battery Tunnels, East River, New York.

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THORITE, quick-set mortar, for patching and filling blistered concrete, where reinforcing rods are exposed and corroded, in heavy mass structures. High reinforced-concrete buildings, cornices, sills, lintels, belt courses, grain elevators, highway bridges, railroad bridges and underpasses, dams, reservoirs, water-treating tanks, filtration plants and cracks in masonry buildings of all types.

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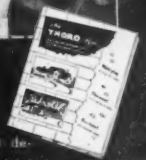

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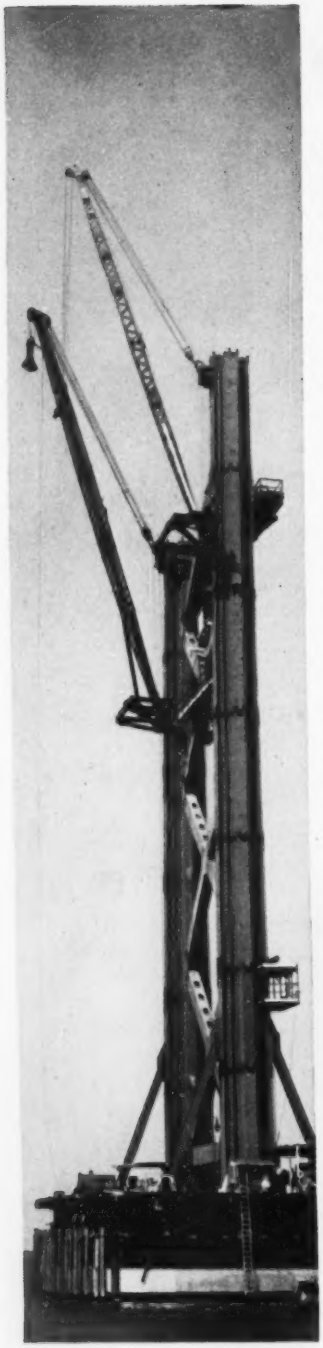
NEW EAGLE, PENNSYLVANIA

Chicago booms speed erection



NO CREEPER TRAVELER – Novel method of erecting towers substitutes two Chicago booms for conventional traveler.

CHICAGO BOOMS have been substituted for the customary creeper traveler in erection of towers for the Chesapeake Bay Bridge suspension span, and Bethlehem steel engineers are satisfied that they have found a real timesaver for this type of work.

The original installation takes three days instead of the two weeks it takes to set up a creeper traveler; and jumping the Chicago boom takes hours instead of days. (There is not much difference in time required to erect steel, but the booms are much lighter to handle than the traveler.)

The bridge towers stand 344 ft above mean low water. Legs are cross-shaped in plan, with a fixed transverse dimension of 6 ft, 6½ in., and a variable dimension parallel to the bridge centerline 9 ft 11 in. at base and 6 ft 6½ in. at the top.

The suspension bridge will be 2,920 ft long, with a center span of 1,600 ft. The entire 4-mile long bridge is described in ENR, Oct. 26, 1950, p. 32 (foundation) and Sept. 27, p. 42 (erection other than the suspension span).

• **Erection procedure**—Here is how the Chesapeake Bay Bridge towers are being erected. Tower-leg sections varying in length from 20 to 30 ft, and weighing about 30 tons each are barged to the job completely fabricated; tower derrick boat erects six sections of each leg, up to El 174 then the derrick installs the first 100-ft Chicago boom with its heel at El 131 and its topping lift bracket at El 170. This first boom erects the seventh section of the opposite leg, and then it installs the second Chicago boom on this leg, one section higher.

Thereafter, the booms take turns erecting two sections and jumping each other, until the first one erects the final section and dismantles the second. This boom then erects a small stiffleg derrick on top of the tower, for use in erecting the cables and suspended structure.

• **Swing is a problem**—In developing the Chicago-boom scheme, Bethlehem's erecting department had to invent a satisfactory device for swinging the booms.

By keeping the boom's vertical gudgeon pin away from the tower leg it was possible to get 120 deg of swing, from a position parallel to the bridge centerline, inward through the space between the legs. Control of this swing was obtained with a 120-deg segment of an 8-ft radius bull wheel. Swinging power was applied through a diagonal strut extending from a point on the boom 15 ft from its horizontal heel pin, down to a point on the bull wheel. The point on the bull wheel was in line with the axis of the heel pin, so the strut would work at all boom angles.

NO SHIMS—Pier for tower leg was built to exact grade, with anchor bolts set precisely, in order to distribute tower base-plate load with full uniformity. Concrete was shaved as needed with power grinder. (ENR photo)

# of Chesapeake bridge towers

The bull wheel was bracketed down to the gudgeon housing. A bracketed frame for the swinging line sheaves completed the assembly.

• **How the booms are jumped**—Procedure for jumping a Chicago boom is illustrated. Jumping position is 30 deg inward, at 25-ft radius. Maximum load on the adjacent boom is 44,000 lb, which includes the boom, the swinger assembly, and main falls. The topping lift bracket is jumped first, after the boom is tied off. To keep the boom balanced during its lift, an auxiliary line through the topping lift bracket keeps tension at boom heel.

As has been mentioned, jumping, as well as installation and dismantling, takes much less time than do similar operations with the conventional creeper traveler. The creeper traveler also is significantly heavier than the Chicago booms. The latter, complete with topping bracket, weigh a maximum of 22 tons apiece. The creeper traveler that Bethlehem used on the second Tacoma Narrows Bridge, weighed 115 tons; its two cat-heads each weighed 9 tons additional. The capacities of the two systems are about the same.

• **No shimming**—One other feature of Chesapeake tower erection varies from practice that has prevailed in the past. Instead of being erected on steel shims, later to be packed with grout for full bearing, the tower's base plate rests directly on pier concrete, which was finished to grade by the substructure contractor.

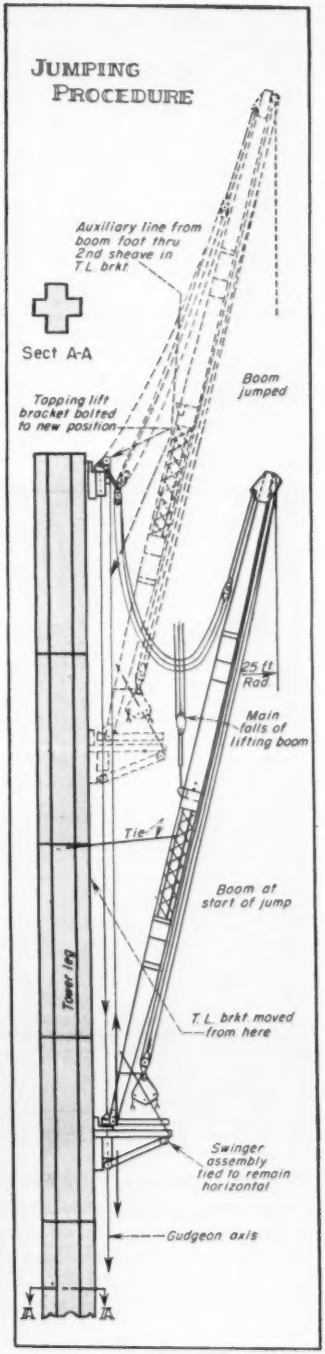
Theoretically, this method assures the most complete and effective load distribution at this important transfer plane. But it gave Bethlehem some trouble. Despite perfect evenness by ordinary inspection techniques, imperfections showed up when the lower tower sections were set. The sections were found to be out of plumb and had to be removed so that the concrete surface could be shaved in spots with a power grinder. Location of these spots was obtained by dusting cement on the concrete before each trial for fit. When the section was removed the cement had a glassy appearance at high spots.

While the ultimate result was the excellent bearing intended by the designers (and the end probably justified) cutting and fitting was time-consuming.

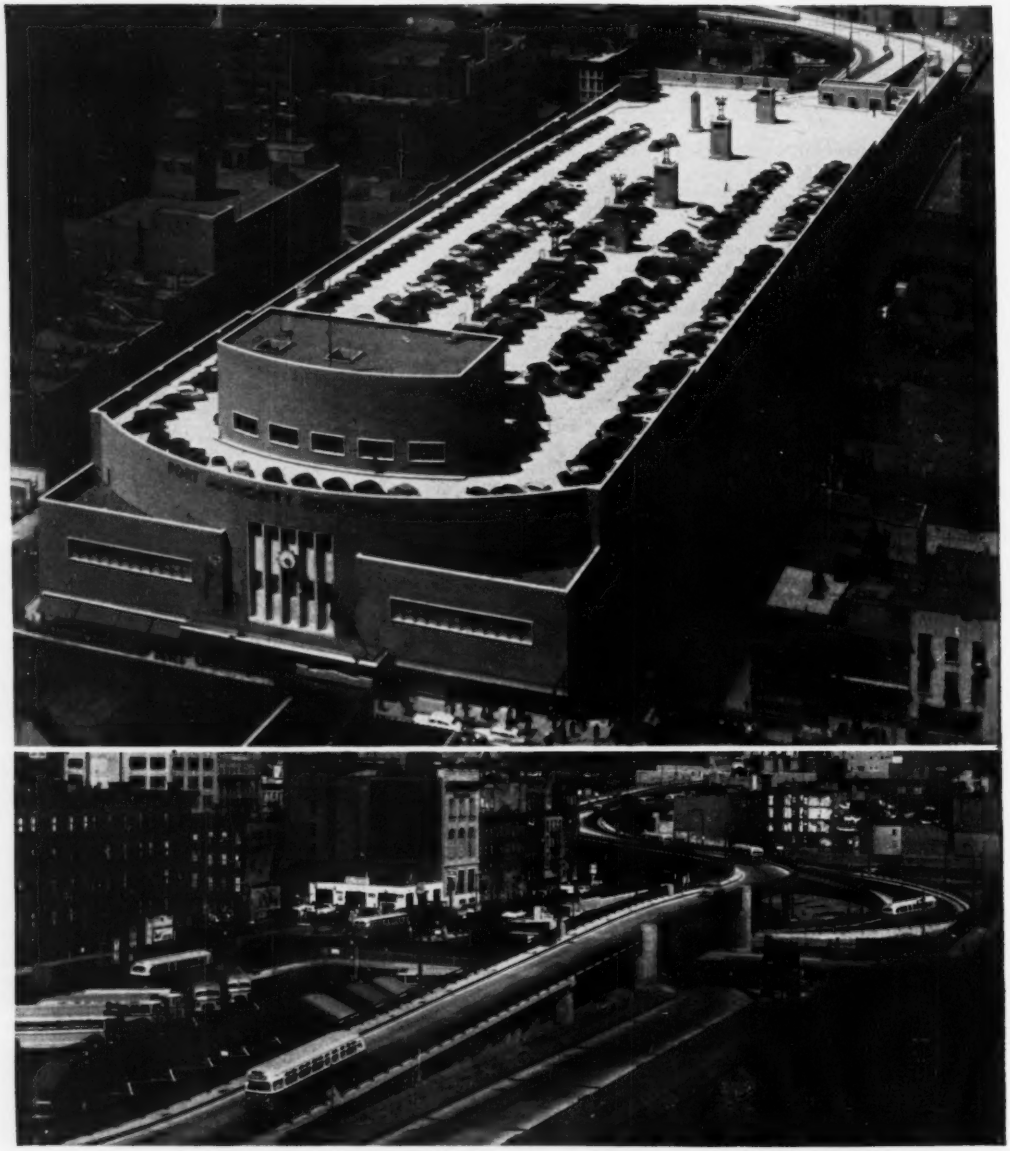
Erection of the entire Chesapeake superstructure is being done by Bethlehem's eastern erection division, under G. P. Bullard, manager of erection.

T. M. Martinson is resident engineer for Bethlehem, and R. C. Gilmore is project engineer for J. E. Greiner Co., Baltimore, consultants for the owner—the State of Maryland.

GENTLY, GENTLY, bottom tower section settles over its anchor bolts. Section, weighing 30 tons is handled by floating tower derrick moored alongside tower pier. Excellent bearing of base plate on concrete was attained. (ENR photo)

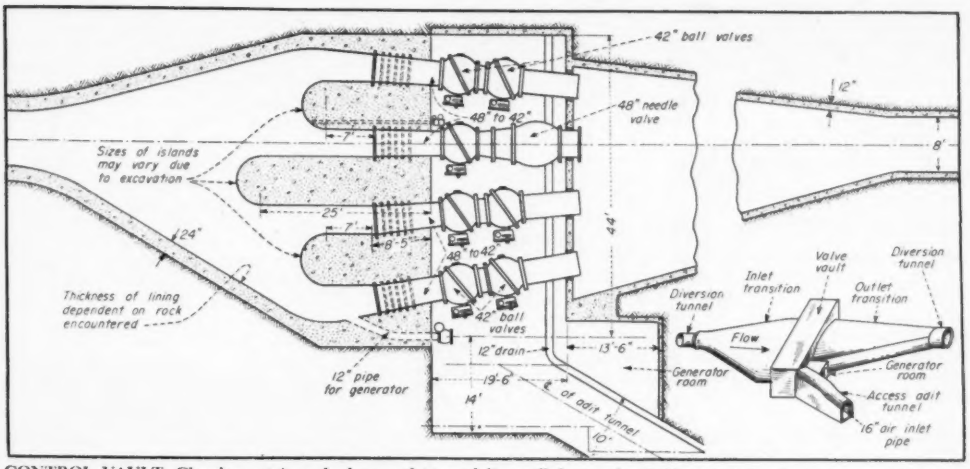

JUMPING PROCEDURE
Auxiliary line from boom foot thru 2nd sheave in T.L. brkt.
Sect A-A
Boom jumped
Topping lift bracket bolted to new position
25 ft Rad
Main falls of lifting boom
Tie
Boom at start of jump
Tower leg
T.L. brkt moved from here
Swinger assembly tied to remain horizontal
Gudgeon axis

TO JUMP—Bethlehem crews support boom with other boom, detach swinger assembly and hoist to new position.



World's Largest Bus Terminal—The 4-level, 800 ft x 200 ft Port Authority Bus Terminal in New York City is the largest and most modern of its type ever built. The red-orange brick structure reduces street congestion by centralizing many of the bus terminals formerly scattered throughout the midtown area. It connects with the Lincoln Tunnel by means of overhead ramps, 1500 ft long, which are radiant-heated with Rayduct steel pipe. The terminal has facilities for about 132,000 passengers daily, and it can handle peak loads of up to 600 buses per hour. About 450 cars can be parked on its 3-acre roof. Both the terminal and its ramps have steel frameworks of Bethlehem Structural Shapes. *Planning and Design:* Port of New York Authority, Frank Carey, resident engineer, John M. Kyle, chief engineer; *Contractor:* Turner Construction Co., New York; *Steel Fabricator and Erector:* Harris Structural Steel Co., New York.

BETHLEHEM STEEL



CONTROL VAULT—Chamber cut in rock along outlet-tunnel line will house electrically operated valves to control flow past dam. Access adit will reach the bomb-proof, frost-proof chamber.

Controls to go underground at Denver water supply dam

COLORADO'S HIGHEST DAM, now under construction on South Boulder Creek, about 35 miles northwest of Denver, will have its main outlet valves protected against aerial attack. They will be in a subterranean chamber along the outlet tunnel—safe from bombs, and from freezing.

The $11,000,000 structure will not only give Denver a new and badly needed water supply but will also furnish about 1 mgd to the $45 million atomic energy plant now being built on the plains less than 10 miles east of the damsite. The dam will impound water transmitted through the Moffat Tunnel from the Fraser River development area on the western slope of the Continental Divide.

Main outlet valves will be placed in a vault 58 x 19½ ft. in plan, located in the dam's left abutment. The chamber will have 225 ft of vertical rock cover and 100 ft of horizontal protection. Denver Water Board engineers estimate that placing the valves in the protected chamber, rather than in an exposed position adjacent to the dam, will involve no more than $25,000 additional expense. They figure this as cheap protection.

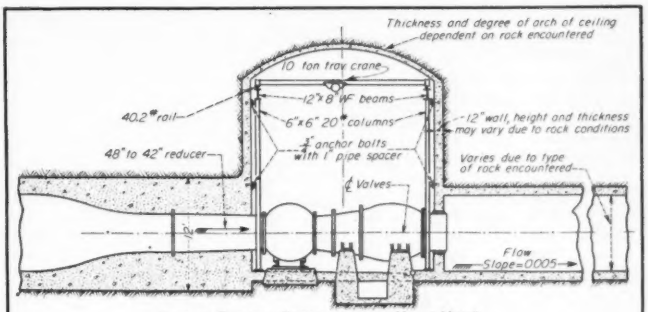
Besides protection from air attack, the chamber will afford insurance against freezing of the valves in extremely cold weather. At another Denver valve house, heating has been found to be a considerable chore and responsibility. Fires must be maintained during freezing weather.

• **Dam dimensions**—South Boulder Creek Dam will be 340 ft from base of foundation to top of concrete. It will be of gravity type, with a long radius arch (1,740 ft) to fit the topography of the site. Maximum section will be 268 ft thick at the base and 25 ft thick at the top.

Length of crest will be 1,022 ft. The spillway, 160 ft wide and providing for a possible flood of 17,000 cfs, is in the center of the dam. Training walls on the downstream face of the dam will channelize the flow. No stilling basin is provided, since it is believed the natural stream bed is rugged enough to withstand energy of the water.

Plans call for radial construction joints placed 50 ft apart at the upstream face. Provision will be made for pressure grouting them after the concrete has reached its normal temperature. Cooling coils through which stream water will be circulated will be set in layers every five feet of height. An access or inspection gallery will provide working space for cutoff curtain grouting near the upstream face, and will also give an exit for drainage water, if any.

• **The valve arrangement**—Four 42-in. outlets will be set along the 10-ft dia,


Thickness and degree of arch of ceiling dependent on rock encountered
10 ton trav crane
40.2# rail
12"x 8" WF beams
6"x6" 20# columns
48" to 42" reducer
1" anchor bolts with 1" pipe spacer
42" Valves
12" wall, height and thickness may vary due to rock conditions
Varies due to type of rock encountered
Flow
Slope=.0005
SECTION THROUGH TRANSITIONS AND VALVE VAULT

SECTION THROUGH VAULT will look very much like this, depending on actual rock conditions found. Underground valve-house adds little to estimated dam cost.

800-ft-long diversion outlet tunnel, each outlet being controlled by one operating and one reserve valve. The lower outlet must be able to pass the natural flow of South Boulder Creek up to 1,200 cfs—the amount required to satisfy irrigation rights down the creek. Another outlet about 160 ft higher will provide the supply to the power plant to be built in connection with the reservoir. It will be 4 ft in diameter and controlled with a 42-in. outlet also provided with two 42-in. valves. Trash racks of ample capacity will protect the entrances to both outlets.

Provision for the power conduit, penstock, power plant and transmission lines are still in a preliminary state. Indicated capacity of the power plant is 7,875 kw.

• **Dam to grow**—While the initial height of South Boulder Creek Dam will be 340 ft, provision has been made for later increases to 380 and 460 ft. At the 340-ft level, the reservoir will store 42,000 acre-ft of water; at the 380-ft level, 60,000 acre-ft; and at 460 ft, 113,000 acre-ft.

Denver's Water Board definitely foresees the need for raising the dam's height in view of the city's rapidly rising population. During the past decade, population increased about 28%; and average daily water consumption rose from around 60 mgd in 1940 to over 100 mgd in 1950. The City Planning Commission predicts that the Denver metropolitan area population will expand from 560,000 in 1950 to 1,000,000 in 1970.

The new reservoir is part of the water plant enlargement program for which Denver voters approved a $23 million bond issue in May, 1947.

The low bid of $7,019,000 for construction of the dam was submitted last May jointly by Macco Corp., Paramount, Calif., and Puget Sound Bridge and Dredging Co., Seattle. It was $1,155,000 under engineers' estimates. The Denver Water Board will furnish cement, pipe, valves and other materials totaling about $4,000,000. Under the contract, the dam is to be finished in 1,050 calendar days after June 1, 1951.

South Boulder Creek Dam is being built under direction of D. D. Gross, chief engineer for the Denver Board of Water Commissioners.

Notes on legal decisions

Summaries of decisions relating to construction work prepared by I. Vernon Werbin, counselor at law and engineer, New York, author of Legal Phases of Construction Contracts (McGraw-Hill Book Co.)

Cost-plus contracts

A contract provided that the contractor was to erect and finish certain buildings according to plans and specifications prepared by the owner's architect and the contractor agreed to "find and provide such good, proper and sufficient materials of all kinds whatsoever, as shall be proper and sufficient for the completing and finishing all the said apartments and buildings. * * *" The contract provided that the contractor would be paid for labor and materials "as the same costs the contractor and to pay in addition to said cost the sum equal to 10 percent of the aforesaid total cost as the profit to said contractor."

The contract also provided for weekly payments for the labor of all persons actually engaged on the project and to pay monthly all bills for materials furnished, less discounts. The contract further provided that after the building was completed, the owner was to "pay to the contractor 10 percent of the total cost to represent their profit in the matter of the construction of the aforesaid." It was further agreed, that the owner should have "option at any time during the course of construction, * * * * to cancel the contract herein by notifying such contractor of such action. If such event takes place the parties hereto shall compute the total cost of construction and labor up to that date, and to pay 10 percent thereof to the contractor as his profit up to that date."

The owner during the course of construction exercised his right pursuant to the aforementioned provision of the contract to terminate the same. He paid the contractor for the labor and materials delivered to the site, but some of the materials not having actually been incorporated in the buildings, the owner refused to pay the contractor the 10 percent of the cost of such materials and an action was brought by the contractor to recover the same.[1]

The contractor recovered a judgment from which the owner appealed. The appellate court in its opinion stated: "The question on appeal is whether plaintiff, a general contractor under a cost-plus contract for the construction of buildings on land owned by the defendant, is entitled to recover the percentage above the cost of materials delivered to the job, but not used in the construction, because prior to completion the owner terminated the contract in accordance with its terms. The court below construed that 'The minute the materials were delivered to the job, as long as they were necessary to be used on the job, the plaintiff became entitled to collect his 10 percent' and entered judgment in favor of plaintiff. The defendant appeals on the ground that the court's interpretation of the contract was erroneous."

The appellate court affirmed the judgment of the lower court holding that in its opinion it was not the intention of the parties as expressed in the contract, that the contractor was to receive the 10 percent only if the buildings were fully constructed.

"The contract had two provisions for the payment of compensation: (1) under Par. 5, after completion of the building, when plaintiff was to be paid 10 percent of the total cost of construction; or (2) under Par. 9, if the contract was terminated before completion of the buildings, as happened, then 'parties hereto shall compute the total cost of construction and labor up to that date, and to pay 10 percent thereof to the contractor as his profit up to that date.'

"Analogous situations arose in cases where the court was called upon to determine whether one furnishing materials intended for a building, but not used, was entitled to a lien under the general mechanic's lien law. There the rule is that a question of fact exists; whether the items are in whole or in part for materials furnished in good faith for the erection of the building, and when that is established, it is no defense that there may have been a failure to use materials thus furnished.

'The materials, having been furnished for the building and delivered to the company or to their agents in good faith, it is immaterial to the validity of the lien whether they were used in the building or not.'[2]

"So, in this case, the materials having been delivered to the premises for use in the construction of the building, the owner having paid for them and later terminated the contract in accordance with its terms, the plaintiff was entitled to compensation for his services computed on the basis agreed upon, i.e., 10 percent of the total cost of construction and labor up to that date."

(1) Washington Const. Co., Inc. v Spinela, 80 A. 2d 318, Superior Court of New Jersey, Appellate Division, April 18, 1951.
(2) Morris County Bank v Rockaway Mfg. Co., 14 N. J. Eq. 189, Bell v Mecum, 75 N. J. L. 547, 68 A. 149, Atlantic City Lumber Co. v Atlantic City, 104 N. J. Eq. 483, 146 A. 307.

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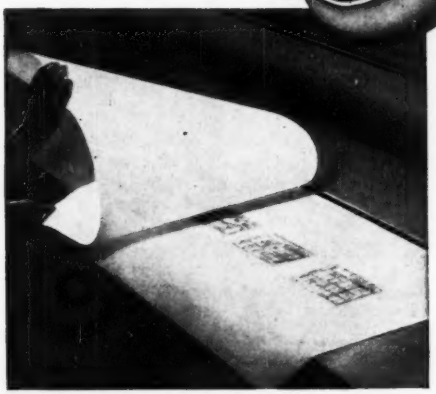

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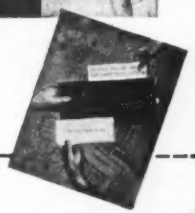

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From April, 1951 issue of NFPA Quarterly, published by National Fire Protection Association.

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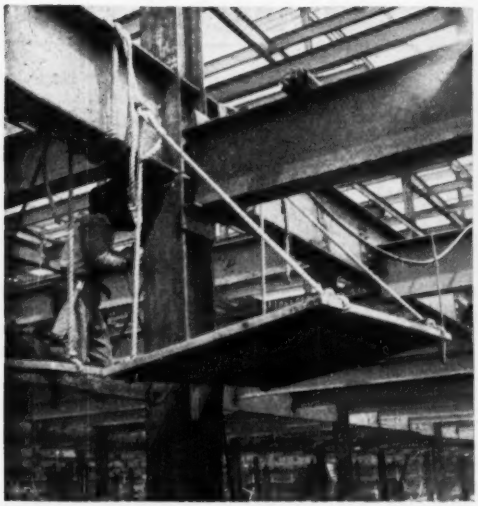

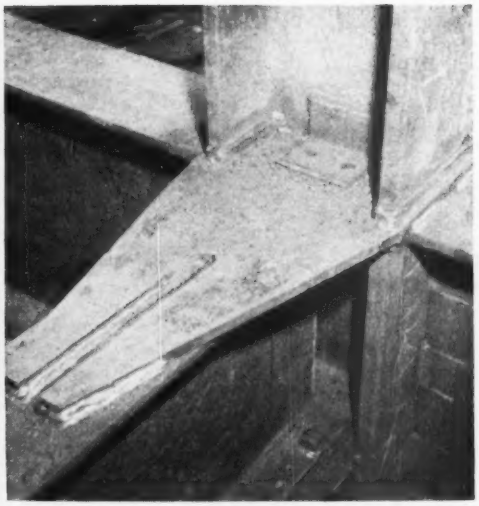

STEEL FRAME of a 4-story Beverly Hills, Calif., department store was field welded for continuity. Columns terminate at girders, which are reinforced with vertical stiffeners. Slot in beam top plate provides extra weld area (right).

Welded store requires less steel

J. B. McCormick
District Engineer
The Lincoln Electric Co.
Los Angeles, Calif.

SELECTION of a welded frame instead of a riveted alternate for a 4-story department store sliced 15% off steel requirements.

The building—Beverly Hills branch of J. W. Robinson Co., Los Angeles, Calif.—also has smaller floor-to-floor heights because the steel frame was made continuous in all directions and shallower girders could be used.

Still another advantage of the design was simplified erection. Columns are supported on the girders of a lower story and in turn support the girders of the story above. Continuous for the full length of the building, girders were simply set on top of the columns and lined up for welding.

• **Large, clear floor areas**—In plan, the store is 225x320 ft, containing 244,000 sq ft of floor area. At present, only a small portion of the fourth floor is being built; when it is expanded at a later date, 41,000 sq ft more may be added.

In the interior of the store, columns generally are spaced 32 ft apart, forming 1,024-sq ft bays. A noteworthy exception is a group of six bays, each with an even larger area unobstructed by columns. Supporting upper-story columns at midspan, five 64-ft long, 22-ton plate girders span a 64-ft gap to form a 64x192-ft concourse directly in front of the main entrance.

• **Girders interrupt columns**—Elsewhere girders mostly are 27-in., 102-lb wide-flange beams, continuous for the 320-ft length of the building. They were erected in 47-ft lengths. Seated on tops of the columns, these sections projected 7½ ft beyond the supports, leaving a 17-ft opening. The gap was closed by field welding another length of beam to the cantilevers. Splices in the continuous girders thus formed fall close to points of minimum stress. Since slight variations in the lengths of the members could be taken up in the splice welds, this design added materially to the flexibility of erection.

At columns, girders are reinforced with vertical stiffeners. Lined up with the column flanges, stiffeners were shop welded to girder webs and flanges. They project beyond the girder flanges horizontally, where necessary for alignment with the ends of the column flanges, and also extend vertically downward to the level of the underside of the bottom flanges of the girders. Tops of the lower-story columns were welded to these projections as well as to the girder flanges.

• **Continuous beams**—The girders support floor beams at their third points. Spanning 32 ft between girders, the beams are 18-in. wide-flange sections weighing 50 and 55 lb per ft. They were designed for continuity across the width of the building.

At connections, continuity stresses are transferred through plates attached to top and bottom beam flanges. All top plates and the bottom plates at column connections were welded to the beams. Compression plates at beam-to-girder connections, however, were riveted to beam bottoms and welded to clip angles, which in turn were shop bolted and fielded welded to girder webs. Shear angles were shop riveted to beams, but field welded to girder webs.

Columns rest on and were welded to beam top plates. These plates also were welded to girder top flanges.

About 1,700 tons of structural steel were required for the building and 8 tons of E-6010 and E-6012 electrodes in 5/32, 3/16 and ¼-in. rod sizes. Seventeen arc-welding machines, mostly 300-amp, were used by 16 welders. Steel was fabricated and erected by Bethlehem Pacific Coast Steel Corp., with Jack Hamilton as erection superintendent. William Simpson Const. Co., Los Angeles, was the contractor.

Paul E. Jeffers and Robert Wilder, the structural engineers, made eight preliminary designs of a typical building bay to determine the most economical scheme. Simpson then made comparative cost studies, which resulted in elimination of all but three—two welded designs and one riveted. Finally, the design saving 15% of the steel, compared with the riveted alternate, was chosen.

Pereira & Luckman and Charles O. Matchman were the architects.

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READER COMMENT

Shortage of Engineers

Sir: Much comment is being made editorially and otherwise regarding the serious shortage of qualified engineering personnel in the various fields, and many ways are being suggested to alleviate the situation. Your editorial in the Sept. 13 issue is an example.

This situation may be true as it applies to some specific areas or location, or to some specific phase of the science, but in our opinion the over-all picture is not nearly as bad as it is made to appear. It is our further opinion, granting that there may be some foundation to the pessimistic picture, that a material improvement could be accomplished with just a little more reasonable amount of good judgment on the part of those partially responsible for the situation. One angle alone would be of considerable value and that is the decentralization of both military and civilian industry and construction.

We in this area are not having any trouble securing qualified engineering personnel and are able to render the most qualified engineering services of any nature. All we want is the work to put them on. If we do not get it in the comparatively near future, we along with many more such organizations, will have to retrench and the men released will have to go into non-engineering work, as there is not enough of such work to absorb all the talent available, and they thereby become a direct and definite loss where it is supposed to be so badly needed. Otherwise, they must go elsewhere for such employment.

Most of these people are home owners, and so it is not always so easy to pull up and leave. We do not think it is entirely the lack of engineering personnel that is responsible for the predicament as it is in not properly using what we do have. We believe our feeling and opinion in this matter is substantiated by the effort that is now being made by the members of Congress from this entire northern Midwest area to correct the situation.

We hear a lot from the various large equipment manufacturers who are mostly located in the East, to the effect that their production is "stymied" due to lack of enginering facilities. We have contacted a number of these with whose products we are thoroughly familiar and fully capable of serving and offering our services, but our offer goes unaccepted for one reason or another, which leads us to believe that their predicament is not nearly as serious as they are trying to make the public believe.

J. C. MacMillan
Vice President,
Ralph D. Thomas and Associates, Inc.
Minneapolis, Minn.

Wasteful pavement designs

Sir: I read with a great deal of interest the report of Norman W. McLeod, engineering consultant, Canadian Department of Transport, entitled "Canadian [Airport] Pavement Design Defended" ENR Aug. 9, p35.

I wish to join with Mr. McLeod in defending his approach to proper and economic design of pavements for runways and taxiways on modern airports. It has been apparent for sometime past to engineers and airport executives alike that the formula being used by the United States Corps of Engineers for the design of airport pavements is fantastic, obsolete and wasteful. The very formula itself is made up of a series of accumulative factors of safety which in themselves result in waste and absurd thickness of pavement, having little relationship to the actual operating conditions.

At the Los Angeles County Palmdale Airport, under the undersigned's jurisdiction, a recent evaluation was made of cement-concrete runways there which were constructed in 1942. These pavements are of the 9-6-9-in. cross sections, placed directly upon the existing soil subgrade which has been classified as the Hesperia loamy sand and the Adelanto loamy sand. These runways have been subject to aircraft operations up to and including the Boeing Stratocruiser and wheel loads of 100,000 lb. The most recent of these evaluations indicated no failures whatever due to aircraft operations.

Based on the U. S. Engineer Corps' formula for the traffic being handled at the Los Angeles County Palmdale Airport, these runways should be 12 to 14 in. thick.

The federal government through the Army, Navy and Civil Aeronautics Administration is providing millions of dollars for the construction of runways over the nation, using the present U. S. Engineer's formula. It is time that this formula and approach be re-evaluated in the light of existing conditions and present day aircraft operations.

Brig. Gen. William J. Fox
Director, Department of Aviation
County of Los Angeles

70% Deeper Traction Tread!

For the first time highway performance matches off-the-road efficiency! *The proof is in!* Fleet operators acclaim U. S. Royals as the first to completely fulfill the tough on-and-off-the-road operating demands. That's because tread and carcass are *job-fitted* to give new *penetration* and *traction off the road* plus—*smooth, long-wearing, non-skid mileage on the highway.*

Here's what the Fleetmaster gives you:

- ★ *70% deeper traction tread!*
- ★ *Tougher, stronger carcass! (More Recaps)*
- ★ *Specialized tread compounds!*
- ★ *Thicker under-tread!*
- ★ *Round-molded to the tire's inflated shape to reduce distortion stress and strain!*

Your proof is at your U. S. Royal Dealer's. A phone call gets it for you—he's listed in the Classified Telephone Book.

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MOBILCRANE provides unlimited mobility with one-man, one-engine operation

Never before, such a versatile, profit-boosting material handling tool as OSGOOD Mobilcrane Model 825! *Unlimited mobility* with one-man, one-engine control of all operating functions (including travel) cuts job-time and overhead costs to a minimum whether the machine is used as a crane, clamshell, or log-loader. The Mobilcrane goes anywhere—over dirt roads, yards, wharves, or concrete floors—without damage to machine or underfooting. It picks up a load, travels four speeds either forward or reverse, and deposits the load anywhere within a 360 degree circle. Hydraulic steering . . . muscle-saving air control of swing, hoist, and travel motions . . . performance-smoothing OSGOOD Air Cushion Clutches . . . Independent Boomhoist . . . and many other outstanding features are standard. Write today.

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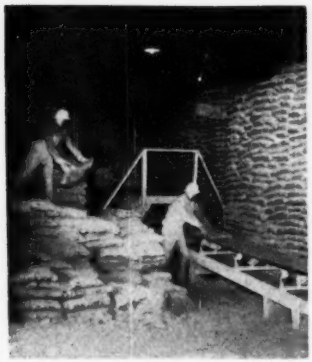
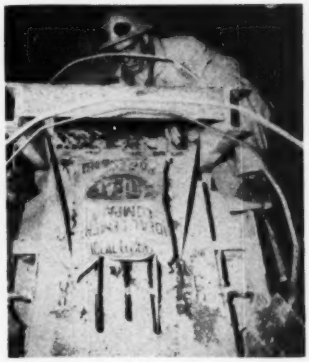
FIELD AND OFFICE



ON THE WAY—Cement for use on the Idaho Power Co.'s C. J. Strike plant starts on a conveyor belt from the storage shed.



INTO THE MIX—Bag is ripped, cement shakes into hopper bins, and sack is on its way to an incinerator.

"Unsacker" speeds cement handling

About 1,200 bags of cement will go into the spillway and the power house of Idaho Power Co's latest hydro development on the Snake River east of Boise—and the cement will be delivered to the site in individual sacks.

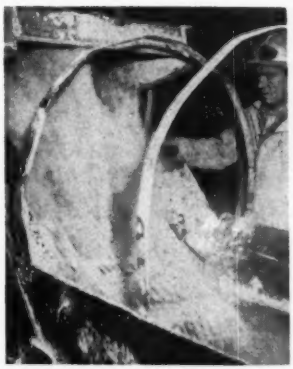
Use of sack cement presented a problem since labor to empty the paper bags by conventional methods would be costly.

However, several employees of the contractor (Morrison-Knudsen, Inc.) pooled their ingenuity and came up with an efficient hybrid device that is contributing to speed as well as lower cost of operation.

The sacks are loaded by hand onto a conveyor belt at 8-ft. intervals. The belt carries them across two circular saws and rips them open at the rate of 23 per minute. The open sacks then pass onto a vibrating chain where the cement is shaken into a hopper feeding into storage silos of the big mixing plant set up at the construction site. Empty sacks are carried by the belt directly to an incinerator for disposal.

The vibrating chain is an idea borrowed from a mechanical potato-digger—a relatively new invention in itself. Normal function of the chain is to shake the dirt from Idaho's famed potatoes after they have been uprooted by the mechanical digger used by farmers.

By the time the project is finished the chain will have shaken enough cement from the bags for the mix of 500,000 tons of concrete for the Power company's planned $21,000,000 hydro project.



OPEN UP—The belt delivers the bag to the two circular saws in foreground. They chop through the tough paper.

Power battle looms

Ten Missouri power companies asked the Federal Court last week to prevent use in the Southwest of Rural Electrification Administration funds for cooperative steam power plants.

The move was made while their suit to permanently bar construction of steam power plants by the cooperatives and sale of power to the Southwest Power Administration is pending. In asking the injunction, the companies said it appeared the suit could not come up for trial until late in 1952.

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C.....The Preservative (Creosote)
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For *permanent* foundations—for *economical* foundations—specify Koppers Pressure-Creosoted Timber Piles. These piles are fully protected against insects and decay. They are low in first cost—usually lower than other permanent pile materials.

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Koppers burns its brand into every one of its pressure-creosoted piles. This brand is *your* protection; it is *your* assurance of quality. And it plainly tells you and your inspector what you are getting in preservative and retention.

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Modern Building Codes — National, Regional and City—recognize the permanence of Pressure-Creosoted Piles in building foundations. Koppers Piles meet Code requirements.

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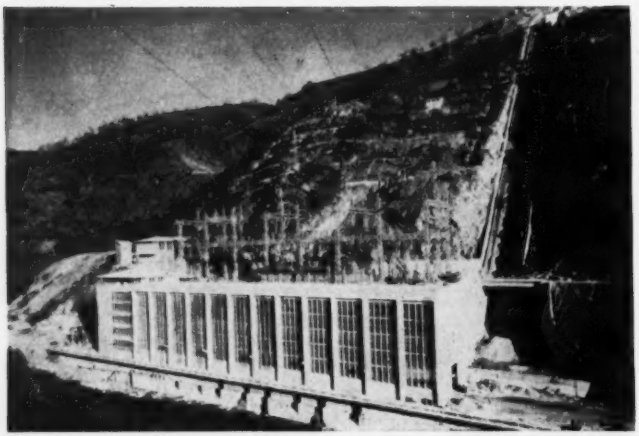

PORTUGUESE POWER STATION—This is the newly-opened Vila Nova power station about 60 miles northeast of Oporto, Portugal. The water used runs through a pipeline down the mountain side from the 300-ft dam in the Rabagao Valley. This government-sponsored project is part of a broad scheme for developing the country's natural resources. To form the reservoir the village of Venda Nova was completely submerged and, to carry the pipeline it was necessary to blast a 2½-mi tunnel through the rock. The British Group has supplied the hydraulic and electrical equipment—Eastern Pubs photo.

Push development plan for Port of Melbourne

An extensive program for the development of the port of Melbourne, Australia, is being carried out to increase that port's capacity by 50 percent in the next decade.

Additional coal wharves are under construction and coal unloading is being extensively mechanized. A special steel-handling berth with modern equipment is under construction at a cost of $800,000. Well advanced is the work on modernization of the international passenger terminal at a cost of over $200,000.

Most of the wharf construction is being carried out with precast concrete. Piles and decking for the wharves are cast off-site and carried to the site ready for installation.

The river entrance docks project will provide 28 new berths for ocean-going ships and would eventually replace the present passenger terminal. A hugh area is now being reclaimed from the sea under a $3,400,000 contract. Nearly 4,000,000 cu yd of silt is being lifted and moved.

Steel, cement and other materials are to be brought from abroad. New berths are being built by an English firm of engineers and dredging is being done by a Dutch firm. Mostly imported and migrant manpower is being used.

Swiss engineers to build concrete dam 912 ft high

It is reported from Switzerland that pouring of concrete will get under way next year for the Grande Dixence Dam in the Valais Mountains in the region of the Matterhorn. It will be the largest concrete dam in Europe.

It will have a final height of 912 ft and the width at the base will be 820 ft. Its crown will be 7,400 ft above sea level. A volume of 8,100,000 cu yd of concrete will be needed for the structure, and above 930,000 cu yd of dirt and deteriorated rock will have to be moved to put the foundation on sound rock.

The production of concrete will be in a central mixing plant of the weigh batching type, the output being 330 cu yd per hour. Aggregates are brought to the site by a conveyor system about 5,750 ft long which connects the primary crushers with the main crushing and screening plant.

American engineers aid Greek reclamation work

Since last March 15 American engineer-specialists have been in Greece directing studies and designs for a larger reclamation program, which has been given the highest priority by the E.C.A. Mission there. The project is being carried out by Knappen Tippetts Abbett Engineering Co.

The personnel consists of: Charles F. Travis, special partner for the Middle East; Phillip Z. Kirpich, assistant project manager; Thos. S. Burns, chief design engineer; James B. Ward, geologist; Forrest F. Varney, irrigation engineer; Wilbur L. Powers, consulting agronomist; E. J. Zegarra, soils engineer; Lewis Levine, structural engineer; C. N. Morang, hydraulic engineer; John W. Blue, office engineer; David S. Belknap, flood control engineer; Norris Matthews, specification engineer; Robt. E. Gehr, chief draftsman; and Emerson Lewis, boring.

Germans report on wood research

This resume of papers presented at the recent meeting at Hannover of the German Society for Wood Research on the subject "Wood in Building Construction" is furnished by E. George Stern, research professor at the Virginia Polytechnic Institute:

"According to a paper by W. Stoy, recent German design for farm structures had to be adapted to the use of round timbers in order to be able to utilize the available softwood from the Eifel where the Battle of the Bulge took place. The trees cut now and during coming years cannot be sawed without endangering both human life and wood-working machinery because of the steel splinters lodging in the trees since World War II. Thus, round structural members have to serve the purpose of dressed timbers.

"A paper on Radio Towers of Wood Construction by A. Gattnar indicates that such towers were built ranging up to 625 ft in height. During 1951, a 100-ft tower was constructed of wood and sheathed with asbestos shingles. Metal was excluded in this construction. Thus, bolts, screws, and nails were of compressed resin-impregnated wood (Lignostone) or fiber-reinforced plastics.

"Plywood is being used as heating elements according to a paper by O. Kraemer. Resin-impregnated lignotherm plywood of ⅛-in. thickness has thin wires embedded in the glue joints, thus, serving as heating elements between the wood veneers. Surface temperatures of 120 to 140 F are reached. Surfaced with any type of wood veneer to suit the specific applications, the impregnated panels are washable. They can be used as free-standing heating elements or as wall panelling, for the construction of foot benches, laundry driers, drying cabinets, brooders, hot plates, medical purposes, and furniture.

(Continued on page 59)

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FOR HEAVY GOING

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SLICKEST SWING YOU'VE EVER KNOWN!

It's everything you've wanted for more profitable rock handling . . . It's the P&H 955-A (2½ yd. shovel) . . . newer . . . better . . . proving it where the going is heaviest. Here's why:

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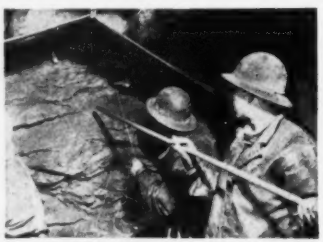
1. EAST PORTAL, BALD MT. TUNNEL—a part of the Colorado Big Thompson Water Diversion and Irrigation Project, Loveland, Colo.—on which the contractor, Winston Bros., of Minneapolis, is using Du Pont "Gelex" and Du Pont "Series B" Delay Electric Blasting Caps exclusively.

2. DRILLING—38-hole, 7-foot round used in driving 12' x 12' horseshoe-shaped tunnel 6,750 feet through mountain.



3. LOADING "GELEX" IN FACE—cohesive and water-resistant, "Gelex" is ideal dynamite for this type of work.

4. CONNECTING UP THE ROUND with Du Pont "Series B" Delay Electric Blasting Caps. Contractor speaks highly of their dependability and performance.

5. READY FOR MUCKING after shot. Excellent fragmentation and little overbreak of schist keep job moving along on fast schedule.

The cohesiveness, water-resistance, efficiency and good fumes of "Gelex" have earned wide recognition with tunnel men everywhere. Ask any Du Pont Explosives representative for further information about Du Pont "Gelex" and "Series B" Delay Electric Blasting Caps. E. I. du Pont de Nemours & Co. (Inc.), Explosives Department, Wilmington 98, Delaware.

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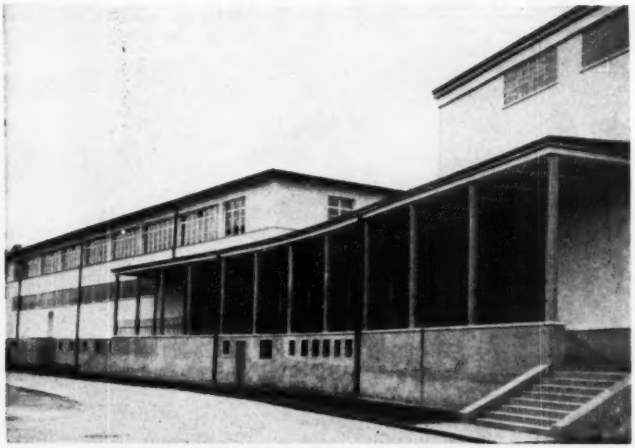
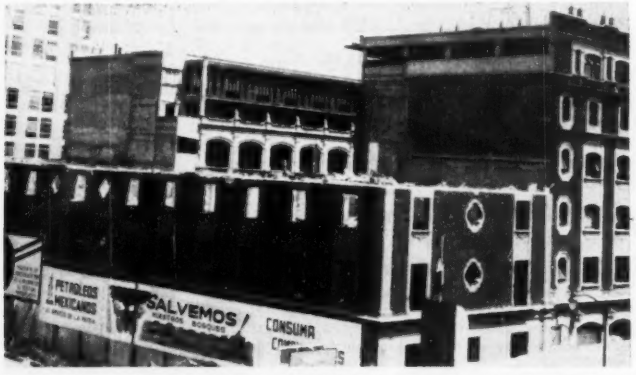
BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*



JUST LIKE HOME—The expatriate American housewife who patronizes this new shopping center built by the U. S. Forces in Austria at Salzburg will easily be able to imagine herself back home in a streamlined supermarket. There is even a parking lot for 75 cars. The two buildings are the Post Exchange and the Commissary. Loading ramps are features of both buildings, with loading chutes to basement storage rooms. An access road to these loading ramps is situated so that there will be no interference with the coming and going of shoppers. There is a snack bar in the PX and 4,400 sq ft of shopping space, not only for meat and groceries, but also for clothing, shoes and general merchandise.—U. S. Army photo.

• **To improve Italy's roads**—The Romans were among the earliest good road builders, but now Italy needs more modern highways. A 5-year plan for improvement of national highways will be introduced shortly in a bill to be presented to the Italian Parliament. The plan calls for expenditure of 120 billion lire ($190 million) and is to be financed by a special levy against all motor vehicles, based on hp., for straightening of curves, improvement of road signals, and the construction of cycle and foot paths.



OFF WITH THE OLD, ON WITH THE NEW—Pemex (Petrolos Mexicanos), the Mexican government oil monopoly, has outgrown its headquarters office building in downtown Mexico City. Not wanting to be bothered with moving its staff to temporary quarters, and wishing to build on its present choice site on Avenida Juarez, the organization first tore down the back half and built a modern office structure patterned on the original building. Then, moving its staff to the new back half, it is now tearing down the front where a ten-story skyscraper will rise. Later offices will expand to fill the entire structure. The old building formerly housed Standard Oil of the U. S. and Mexican Eagle Oil Co. of Great Britain. These were expropriated in 1938, and their building taken over by Pemex.

3 Good Ways to Insure

★ Longer Service
★ Minimum Maintenance
★ Greater Dependability

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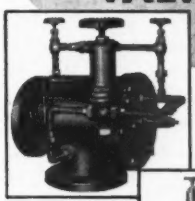
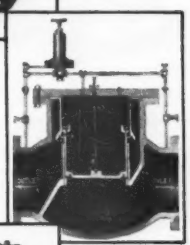
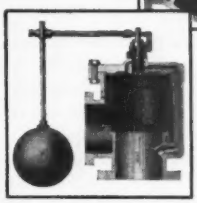


G-A Surge Relief Valve. Bulletin W-2 sent on request.



G-A Water Pressure Reducing Valve. Bulletin W-3 contains the technical information you want.



G-A Cold Water Float Valve. Bulletin W-5 will be of interest to you.

The patented air and water double cushioning feature inherent in all G-A Valves prevents any slam or hammer.

Let our reputable engineers help you with your water control problems.

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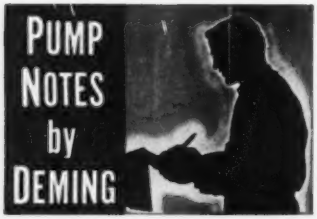

"Motor-Mount" Pumps

This standard centrifugal pump has its own shaft close-coupled to the motor shaft. In case of motor trouble, the pump can be disconnected and remounted on any standard make of motor which has the NEMA type "C" mounting flange.

Made in two types: Type "V" (Vertical) as illustrated at left, and Type "H" (Horizontal).

Illustrated Bulletin No. 4350 gives construction details and engineering data about these new pumps. The line includes 25 units of Type "V" (Vertical) and 25 units of Type "H" (Horizontal).

Capacities range up to 200 gallons per minute with heads up to 165 ft. Motors from 1/4 to 7 1/2 H.P. Speeds 1750 to 3500 rpm. Maximum total pressure suction pressure 50 lbs. Maximum recommended liquid temperature 200° F.

A copy of Bulletin No. 4350 will be mailed promptly upon request.

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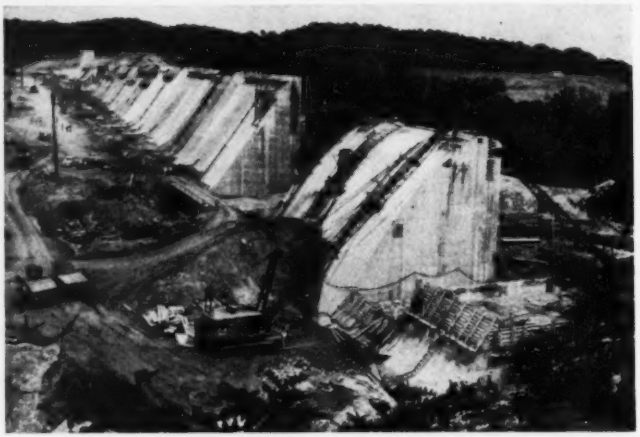


MAY BE CHRISTMAS PRESENT—Guy H. James Construction Co. hopes to present the city of Tulsa with $2.5 million Christmas present. They are working toward late December completion of Spavinaw Lake Dam which will form Tulsa's second water reservoir. Final concrete work is scheduled for this month, after which waters will begin backing up over a 3,300-acre lake area. It will store approximately 100,000 acre-ft of water. (Photo by Le Roy Randall.)

Spavinaw Dam soon ready to add to Tulsa's water

Late in December it is expected that the new Spavinaw Creek Dam (ENR June 28, page 34) second reservoir for the water supply of Tulsa, Okla., will be completed.

Euel James, project manager for the Guy H. James Construction Co., commented that his firm hopes to be able to turn the dam over to the city of Tulsa as a Christmas present.

Right now the 105-ft. high concrete section of the dam is more than 70% completed. The final concrete work will be done this month and then the waters of the creek will begin backing up over the site of what eventually will be a 3,300-acre lake. Work is also well advanced on the 500-ft earthen embankment on the northeast side of the dam. In fact, despite two work stoppages due to flood conditions last July, all the work on the $2,500,000 job is likely to be finished ahead of time.

Project manager James says that his construction crews will have to race the creek when the water begins to rise, as there will be only one 42-in conduit opening through the dam to carry the flow of the creek.

Next May is the scheduled time for the completion of the installation of five radial gates, and the hydroelectric power units for operation of the dam equipment.

Colorado Springs plans new utilities projects

Colorado Springs, Colo., is preparing to spend more than $9,000,000 to expand its public utilities.

Its city council has authorized a bond issue to finance the projects which include: $4,500,000 to construct a pipe line and pumping station to bring water to the city from the Blue River; between $3,000,000 and $4,500,000 for completion of the city's new power plant now under construction; and $500,000 for an improved sewage system.

Black and Veatch, Kansas City, Mo., are consultants on the Blue River water line.

Form weather corporation for rain-making

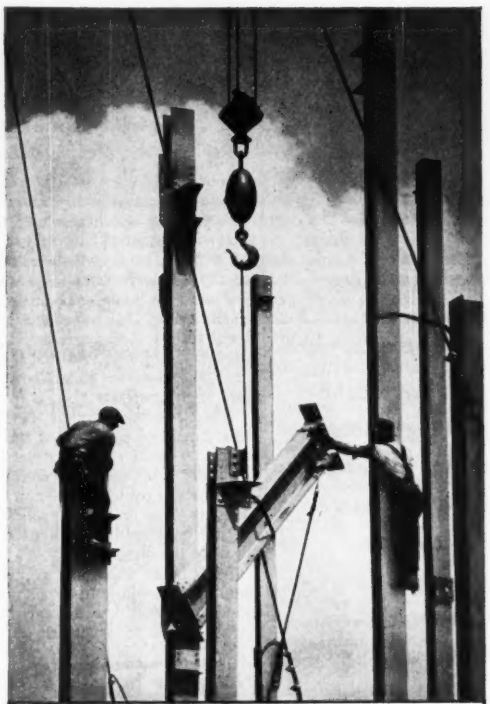
Irrigation districts and municipal water departments of San Diego County, Calif., have formed a San Diego County Weather Corporation to carry out a rainmaking program.

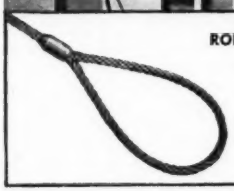
Articles of incorporation have been signed and sent to the secretary of state, and a board of directors has been elected.

The non-profit organization will be financed by member agencies. Elected to the board are O. P. Heald, Fallbrook Public Utility District; E. H. Guyer, Escondido Mutual Water Co.; T. J. Adams, Vista Irrigation

(Continued on page 62)

WIRE ROPE





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"BLUE CENTER" STEEL wire rope is an exclusive Roebling development. It has to pass the most stringent tests for strength, fatigue and abrasion resistance . . . gives rope the extra life that spells economies. Besides, Roebling Preforming assures you top performance on the job. "Blue Center" Preformed is easy to handle . . . has better spooling qualities . . . reduces vibration and whipping.

Roebling makes a complete line of wire rope . . . offers the right grade and construction for every installation. Have your Roebling Field Man help choose the *right* rope for your equipment. Get his advice on the correct use and maintenance of wire rope. It is based on performance records on thousands of installations. John A. Roebling's Sons Company, Trenton 2, New Jersey.

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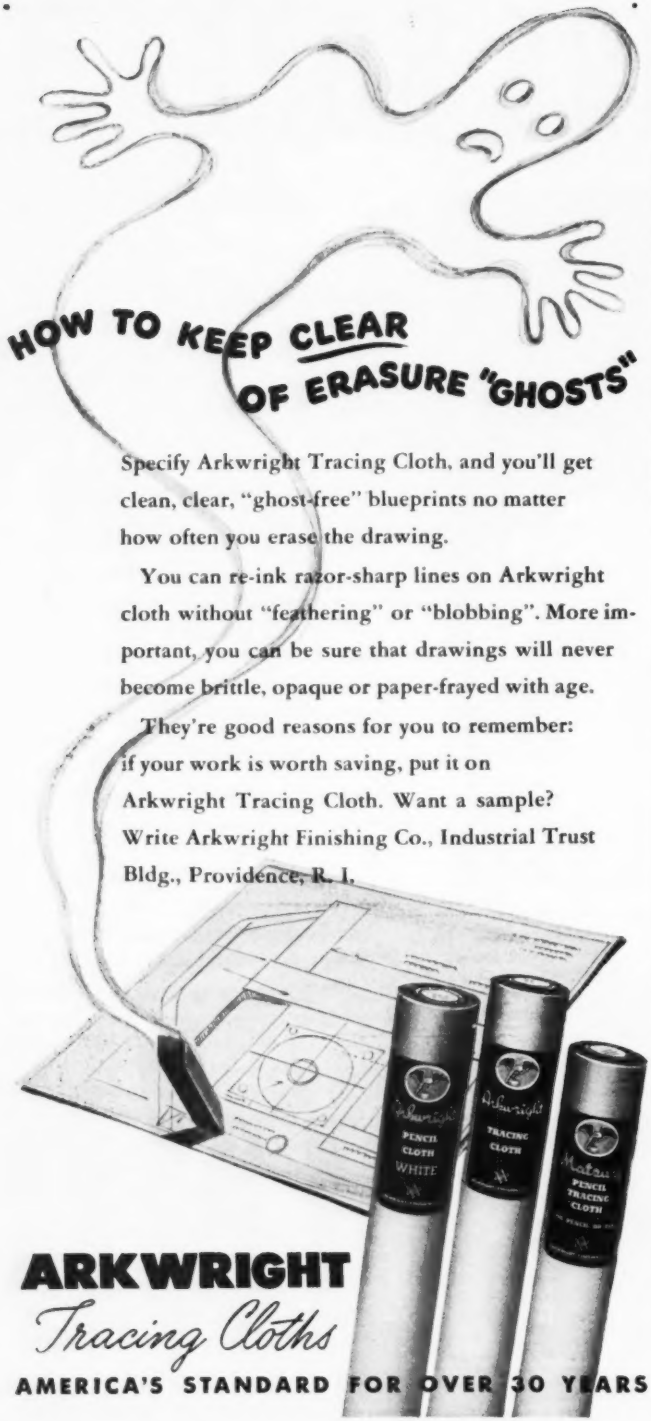
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District; Robert H. Pankey, San Luis Rey Water Conservation District; C. H. Ingels, Carlsbad Mutual Water Co.; Paul Beerman, San Diego City Water Department, and M. J. Shelton, La Mesa, Spring Valley and Lemon Grove Irrigation District. Other participating agencies are the Santa Fe Irrigation District, the San Dieguito Irrigation District and the San Diego County Water Authority.

N. C. highway commission may aid municipalities

The North Carolina Highway Commission has agreed to reconsider its policy under which it would not undertake to contract with municipalities for work on streets which are not parts of the highway system.

Funds for such work are provided in the Powell Act passed by the 1951 legislature, but the commission in its previous resolution said that it did not have the men or materials to enter into such contracts.

The North Carolina League of Municipalities had termed the action unfair to small towns and was of the opinion "that there is no real justification for the ruling of the commission denying help to municipalities that do not have road equipment or labor to work the streets."

After being requested to rescind or modify the resolution, the commission announced that it would call a special meeting soon to reconsider its action.

Nashville has big plans for public improvements

The City Planning Department of Nashville, Tenn. (population 173,359) has drawn up a program of public improvements that calls for an expenditure of $58,854,160 in six years.

There are 16 projects included in the program, as follows: A $9,000,000 sewage disposal system; sanitary sewer installations; a municipal auditorium; two health clinics and a hospital wing; storm sewers; a central expressway; three municipal parking facilities; a central fire and police building; street repaving; expansion of street lighting; widening of Charlotte Ave.; new terminal building at the municipal airport; Capitol Hill redevelopment; water works expansion; new fire hall; and completion of the Victory Memorial Bridge. State and federal money is available for the bridge, the redevelopment project and federal-aid highway routes through the city. Most of the city's share would come from general obligation bonds.

(Continued on page 63)

Municipal . . .

INTER-MESA BRIDGE—New Canyon Bridge was opened at Los Alamos, N. M. early in September. Spanning the precipitous Los Alamos Canyon, it will replace a canyon road which heretofore carried all traffic between South Mesa Technical Area and Los Alamos Mesa, center of the community's activities and site of much of its housing. Bridge contains three traffic lanes and a walkway.

• **Fluorine in bottled water**—A bill authorizing the adding of fluorine to bottled water offered for sale to the public for drinking has been signed into law in California. As originally introduced, the bill would have authorized fluorine treatment to all public water supplied in the state as a means of preventing tooth decay. However, members of the Christian Science church opposed this feature and it was deleted, but the religious group did not have any objection to the treatment of bottled water. In San Francisco, meanwhile, a citizens committee has been formed to campaign for a charter amendment permitting fluoridation of the city's water supply. The matter was placed on the November ballot by the Board of Supervisors who had originally voted for the fluoridation plan but ran into the above-mentioned opposition.

Following the nation-wide pattern that shows cities and towns under 100,000 taking the lead in fluoridation, the small (22,000 pop.) coastal city of Santa Cruz, some 65 mi south of San Francisco, has passed an ordinance providing for fluoridation of its water supply. In doing so, its city council overcame much of the same opposition that his arisen in San Francisco (ENR, May 17, p. 17).

MIGRANT HOUSE—A 2-story wooden house mounted on pontoons lies in shallow water while waiting for the rising tide to be towed from Kennebunk to Goose Rocks Beach, Me., a sea trip of nine miles. Two tugboats, right, stand by to tow the domicile to its new site. The unique moving job cost $4,000—four times the purchase price of the 55-year-old house—Wide World photo.

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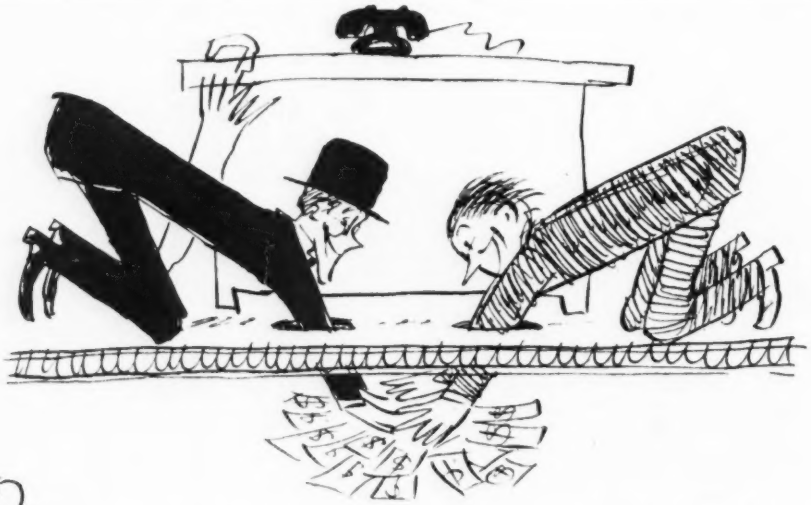

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MEN AND JOBS

BUILDING RUNWAYS for jets at Cecil Field, Fla., left to right, are Comdr. Hilton K. Davis, public works officer, Fred Sebastian, construction superintendent, and Lieut. James F. Donnelly, assistant public works officer.

New appointments

Highway departments

L. A. Peterman, senior resident engineer with the Texas Highway Department, has retired after 26 years.

E. G. Nettleton has been appointed state aide engineer for the district office of the Washington state highway department at Vancouver to succeed Donald E. Stein.

State, City and County

Robert A. Flynn, acting planning director at Dayton, Ohio, has been appointed city planning director. He is a graduate of the University of Cincinnati.

T. Edwin Milligan has been named superintendent of water distribution in Dayton, Ohio. The new position will enable James Keckler, waterworks engineer, to devote more time to engineering duties. Milligan is a graduate of Purdue University, Lafayette, Ind.

Paul Beerman, hydraulic engineer for San Diego, Calif., has been given additional duties as city water director, replacing G. E. **Arnold**, granted leave to take a position with the federal government in Washington, D. C.

The Connecticut Public Utilities Commission has hired **Martin T. Bennett**, a consulting engineer, to assist in drawing up rules, regulations and construction standards for natural gas pipe lines in the state. Mr. Bennett served as gas engineer in New York and Wisconsin during World War II, and was chief of the gas production division of the War Production Board. He also worked with the Tennessee Valley Authority and as chief of a government mission surveying industries in Asia and Europe.

Corps of Engineers

Robert E. Lee, resident engineer at Lookout Point Dam in Oregon since 1949, has been named chief of the supervision and inspection branch of the construction division, Walla Walla district.

Col. John Edward Soule, of Pensacola, Fla., has been named post engineer at Fort Bragg, N. C., succeeding Lt. Col. Karl L. Rudser, transferred to another post. He received his civil engineering degrees from the University of Illinois, and has served in many parts of the country.

Norman Brown is resident engineer of the extension of the seawall at Galveston, Tex.

Clarence C. Davis, resident engineed at Detroit Dam, on the North Santiam River in Oregon, has been transferred to Lookout Point Dam, of the Willamette Basin flood-control and power project to replace Robert E. Lee as resident engineer at the Lookout Point project on the North fork of the Willamette River. Lee is transferred to the Walla Walla district, where he will be chief of the supervision and inspection branch of the construction division. Ray Overholser, who has been assistant to Davis at Detroit Dam, will succeed him as resident engineer.

Col. Ellsworth I. Davis, district engineer of the Galveston District for the last two years, has been assigned to the Far East Command, Yokahoma, Japan.

Charles R. Laticlais is project engineer at Ruse Air Force Base, near Lubbock, Tex.

Lt. Col. John W. Thompson has been appointed executive officer of the Chicago District, Corps of Engineers. He succeeds Lt. Col. George M. Cookson, who left the staff to teach military science and tactics at Notre Dame.

Government Agencies

John D. Lange has been appointed executive director of the National Association of Housing Officials at the Washington, D. C. office.

Capt. Horace B. Jones, (CEC) USN, is in command of the naval construction center, Davisville, R. I. A graduate of the U. S. Naval Academy, 1928, he has been public works officer at the academy since November 1948.

G. E. Arnold has been granted leave as San Diego, Calif., water director to become director of the Water Resources Division of the National Production Authority.

Captain A. G. Mumma, has taken over command of the David Taylor Model Basin, the Navy's experimental and research laboratories at Carderock, Md. He succeeds Rear Adm. George A. Holderness, jr. ordered to duty as contracts director in the Navy Department Bureau of Ships.

K. W. Salmon, of the engineering staff of the New Brunswick Telephone Co., St. John, N. B., has resigned and also as secretary-registrar of the Association of Professional Engineers of New Brunswick. He is rejoining the Canadian Navy.

James R. Barker, extension irrigation engineer at the University of Nebraska has resigned to take further work at the Utah State Agricultural College.

E. Robert de Luccia, formerly chief of the Federal Power Commission's Bureau of Power, has joined Pacific Power and Light to become manager and chief engineer of the Yale project. He also will be general engineering consultant for the company.

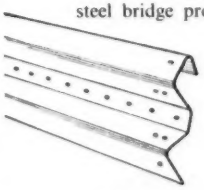
Industrial and commercial

Hal H. Hunt has been assigned by Frederic R. Harris, Inc., New York, to serve as resident engineer at Portland, Ore., during construction of that port's drydock center. Hunt, a graduate of the University of Iowa, formerly was associate editor of ENGINEERING NEWS-RECORD. For three years he has been with the Western Foundation Corp. of New York and Chicago. Earlier he was with TVA on dam construction.

(Continued on page 69)

REBUILD AND PROTECT AGEING BRIDGES WITH MINIMUM STEEL

Old structures, like this 645 foot bridge at Miamisburg, Ohio, can be put back into full service with relatively few tons of USF's modern steel bridge products. USF Structural Plate Bridge Flooring, welded to the stringers, stiffened the entire structure and provided a foundation for bituminous surface. 2600 feet of USF Barrier-Beam Guard Rail links and protects the truss members from accidental damage for life. Here may be the key to *your* bridge maintenance program in these days of steel scarcity. Write USF for more facts about bridge reconstruction with USF's modern steel bridge products.



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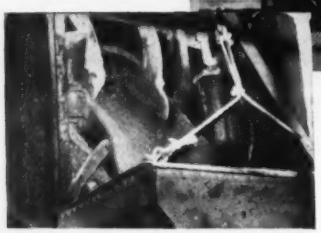
17 Years Young and 3,100,000 Cubic Yards to show for it!

126-S Worthington-Ransome Big Mixer at Arundel-Brooks Concrete Corporation's Wolf Street plant, Baltimore, shows hardly any sign of wear after having poured 3,100,000 cu yd in its 17 years.



Worthington-Ransome 126-S discharging full 5 cu yd batch in approximately 30 seconds.

One of Arundel-Brooks' 6½ cu yd agitators pouring a retaining wall at General Sam Smith Park, being built to relieve traffic congestion at Light and Pratt Streets, Baltimore.

In 1950—its 17th year—this veteran concrete mixer poured more than 250,000 cu yds on a single set of liners!

This extraordinary performance of a 126-S Worthington-Ransome Blue Brute concrete mixer is attested to by Arundel-Brooks' records. The machine, given proper maintenance over its lifetime, shows virtually no wear after uncounted hours of profitable service.

Arundel-Brooks operates two other Worthington-Ransome Big Mixers—an 84-S at the Sparrow's Point plant, a 56-S at Brooklyn, Md.

And eight of the company's growing fleet of truck-mounted agitators are Worthington-Ransome Blue Brute Hi-Ups, considered "highly satisfactory in every respect."

These eight are used for most long-distance hauls because their light weight* permits carrying a maximum payload with strict adherence to highway load limits.

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**7,290 lb for the standard 4½ cu yd truck mixer, as little as 6,700 lb for 6½ cu yd agitator models.*

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You'll find you, too, can get the real *performance plus* from Worthington and Worthington-Ransome Blue Brutes—a broad line of construction equipment noted for the rugged quality your type of work demands.

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IF IT'S A CONSTRUCTION JOB, IT'S A BLUE BRUTE JOB

Men and Jobs . . .

Retirements

Geo. E. Heck, for the last 34 years a research engineer in wood construction at the U. S. Forest Products Laboratory at Madison, Wis., has retired to enter private engineering consulting work.

Cecil H. Fisher, civil engineer, for the last 20 years manager of the storage and delivery section of the Du Pont Co.'s explosives department is retiring after 33 years with the company. He is succeeded by Henry T. Rittman, Jr.

Miss Lois E. Teller, who has worked for the government for 34 years, is retiring as an administrative assistant in the Office of the Chief of Engineers. Thirty of Miss Teller's 34 years of service have been with the Army Engineers.

Fred Robinson, plant manager, Universal Atlas Cement Company, Duluth, Minn., after 46 years.

Leonard H. Sinclair, a civilian in the Navy Department, retired recently after 45 years with the Bureau of Yards and Docks. The 64-year old special assistant to the assistant chief of operations was the bureau's senior expert on public works and budgetary affairs. His retirement ends a 102-year family association with the Navy Department, his late father, John S. Sinclair, having served 57 years in the Navy.

Maj. J. G. Maclachlan, who completed the Hudson Bay Railway to Churchill and brought it up to modern operating standards, has retired as manager. He was with the line for 25 years.

Edward E. Reed, pioneer of New Jersey road building with 42 years of state service has retired. As the supervising engineer of all state aid projects in recent years, he has had great responsibility in the investment of $16,000,000 in New Jersey state funds annually.

Resignations

Ralph Priestley has resigned as dean of California State Polytechnic College engineering division at San Luis Obispo, to work with Kirby and Mulvin, architects, San Francisco.

George N. Wallace has resigned as Montgomery County planning director at Dayton, Ohio, to become chief planner for Cleveland. Wallace was also executive secretary of the Montgomery County rural zoning commission.

John Andrews, superintendent and chemist of the city water purification plant at Raleigh, N. C., has resigned to return to the North Carolina State Board of Health as principal sanitary engineer.

M. H. Frimodig, Lansing, Mich., estimate and contract engineer for the Michigan State Highway Department, has resigned after 20 years.

Neill S. Green has resigned as superintendent of the city water department at Dunn, N. C. to go into private employment.

C. H. Cooper has resigned as assistant street superintendent at Shelby, Ohio, after 10 years.

Ralph B. Thomas has resigned as engineer of Lucas County, Iowa.

J. A. McNeill has resigned from the bridge department of the North Carolina Highway Commission at Raleigh, N. C., to go with the Arnold Stone Co of Greensboro, N. C.

J. A. Johnson and **Roy Crain** have resigned as section foreman in the maintenance department and as inspector with the construction department, respectively, of the Third Division offices of the North Carolina Highway Department at Elizabethtown, N. C., to go to North Africa with the Atlas Corp.

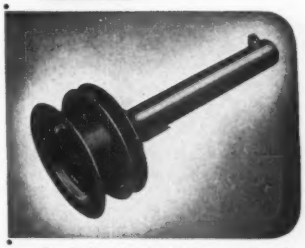
Honors

In recognition of a lifetime of service and leadership in the cause of standardization, the first award of an annual gold Standards Medal has been made to **Paul G. Agnew,** consultant to the American Standards Association and an outstanding authority on standards in the United States. Formal presentation of the metal, which will be given each year by the American Standards Association, is being made at the Second National Standardization Conference in New York, this month.

RETIRING—Chas. A. Bissell, regional engineer, Bureau of Reclamation, region 3, at Boulder City, Nev., is retiring after 34 years service. At various times during his long career he was chief of the engineering division, Washington, D. C.; chief engineer, Denver office; and bureau representative on the U. S. Government Interdepartmental Board of Surveys and Maps.

(Continued on page 70)

2 ways to make crane operations pay more



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Steel tagline holds magnet steady and absorbs the load . . . protective slack is maintained in expensive magnet cable to avoid jerking, pulling loose at the terminals or snagging.

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Sales and service building using 40' trussed rafters furnished by Roof Structures, Inc., Webster Groves, Mo.

Early in 1946 our Engineering Department was called upon to submit suggestions for 24-foot-span trussed rafters for a large project of veterans' homes. The builder intended using low-cost non-bearing interior walls and so required a roof and ceiling framing system supported solely by the exterior walls.

The triangular truss developed was a combination of 2 x 4's and 2 x 6's put together with 2½" diameter Teco split rings in overlapping joints. The trusses were placed 24 inches on centers to make the most of the inherent strength of the wood. This permitted the use of regular one-inch roof sheathing and available ceiling materials.

Since then, over 65,000 housing units have been built with Teco trussed rafters.

These economical rafters are also profitable used for commercial, industrial, church and school buildings.

Fabricators in all sections of the country are ready to serve you.

Specify timber—there's plenty of it for early delivery.

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Please send me FREE copy of "Wood Frame Teco Trussed Rafters."

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Men and Jobs . . .

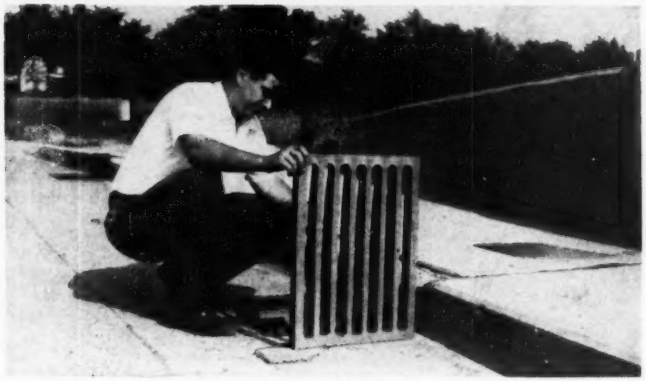
R. W. Christofferson is export manager of the Road and Airport Construction Equipment Department of Milvin Pine & Co., Inc. He attended the University of Minnesota School of Engineering. For nine years he was with Siems-Helmers Inc., of St. Paul, Minn., in the construction of bridges, piers, hydro-electric plants and the improvement of harbors and rivers, and became West Coast Manager for that company. For eleven years he was general manager of the Industrial Equipment Co., one of the Kaiser organizations in Oakland, Calif.

A. Kingsley Ferguson is assistant to William Collins, president, Walter Kidde Contractors, Inc., New York City.

BIG JOB—Clifford S. Strike, president of F. H. McGraw & Co., during July and August served as project manager for his company's $350,000,000 construction job for the AEC near Paducah, Ky. Nearly 10,000 employees are working on the new atomic energy plant.

ASST. DISTRICT ENGINEER—Lt. Col. Robt. W. Lockridge has been assigned as district engineer for the Nashville, Tenn., district of the Corps of Engineers. He received his B.S. in civil engineering from the University of Maryland. After varied military experience since 1931, Colonel Lockridge in 1948 was assigned to the Far Eastern Command as chief of Construction Engineer Section, Headquarters, 5th Air Force, supervising the construction of all 5th Air Force airfields in Japan. In 1950 he was transferred to Korea as deputy for installations.

EDUCATION, RESEARCH



NEW DRAIN INLET GRATE designed by University of Illinois engineers is inspected by Prof. John C. Guillou on a new highway constructed west of Danville, Ill.

More efficient grate can cut drain costs

A new drain inlet grate designed at the University of Illinois has been adopted as the state standard, according to an announcement from the university.

The design was perfected after more than a year of research and testing by Prof. John C. Guillou in charge of the hydraulic engineering laboratory, with the assistance of his associates. They worked on the project in cooperation with the state highway department and the federal Bureau of Public Roads.

The new grates are said to admit twice as much water as the old. This effectiveness is achieved by eliminating all bars across the direction of water flow and by moving the inlet six inches to the upstream side of the catch basin so that the curve of the falling water uses the full opening under the grate.

The greater efficiency of the new design will permit a 50% reduction in the number of necessary inlets, together with the connections and installation work involved. The new grates also are cheaper than the type they will supplant.

Some $500,000 may be saved by use of the new grates in the construction cost of the 6-mile Congress Street superhighway in Chicago, according to an estimate by university engineers.

Professor Guillou and the hydraulic engineering laboratory staff at the university now will turn their study to the underground pipes which connect water inlets and drains. Planning them has been governed often by rule-of-thumb. With accurate engineering data, these may be made smaller, with resulting saving in materials and labor, it is believed.

Fire-endurance tests

Limits of fire endurance for wood-framed walls and partitions with asbestos-cement facings have been established through fire tests at the National Bureau of Standards. The tests of partitions sheathed with gypsum boards over which 3/16-in. asbestos-cement was applied gave the best results in this series. Such construction with ⅜-in. gypsum board gave a fire-resistance rating of one hour, and withstood the hose stream test after 45 minutes fire exposure. The performance of the combination of asbestos-cement sheets as outer protective covering on gypsum board gives a considerably better fire-resistance rating than the sum of components alone. Mineral-wool fills made decided improvement in the fire resistance of some walls and constructions, particularly with reference to heat transmission. Further particulars are to be found in the "Technical News Bulletin," Natural Bureau of Standards, June, 1951.

News briefs . . .

• **Pre-engineering**—Lewis and Clark College, Portland, Ore., has established a co-operative course in pre-enginering in connection with Lafayette College, Easton, Pa. Under the plan, students may take three years of basic work at Lewis and Clark, followed by two years of technical training at Lafayette. This is a plan which has been adopted by many colleges and technical schools in different parts of the country.

• **Housing research projects**—Brief descriptions of housing research projects started under contract with universities, governmental agencies and other nonprofit organizations by the Housing and Home Finance Agency in its housing research program are given in a 66-page, pocketsize booklet, titled, "Housing Research: Capsule Descriptions of Projects Started Under Contract in 1950." One page is devoted to each project. The title of the research project is given together with the institution, agency or organization handling it, and the project director. Immediately following are given (1) the objectives; (2) the scope and method; and (3) the significance of the project, or anticipated value of results expected.

• **Cement checks bacteria**—A cement treatment that checks the growth of bacteria and fungus on the floors and walls of dairies, school gymnasiums, locker and shower rooms, restaurant kitchens and chemical plants is reported to be satisfactory after nine years of testing. Anti-bacterial cement developed by William J. Knapp of the University of California and Charles R. Amberg at the N. Y. State College of Ceramics, Alfred, N. Y., carries seven-tenths of one percent of pentachlorophenol, a fungicide.

• **Asphalt-rubber mix**—At least eight cities and states are experimenting with an asphalt-rubber mix in paving roadways, the American Public Works Association, Chicago, has announced. Highway engineers are using powdered rubber in the mix to provide a smoother and less slippery surface. The addition of rubber to the mixture is expected to lengthen the life of the roads, because it is believed it will overcome asphalt's summer softness and winter brittleness and will tend to allow for expansion and contraction due to weather conditions. Washington, D. C., has a stretch of rubber pavement on Constitution Avenue. Massachusetts highway builders have announced plans for asphalt-rubber tests on an additional 100 miles of roads. Other tests are being conducted in New York City, Detroit, Akron, Columbus, Baltimore, and in Virginia and Texas. Scarcity of rubber and its high cost may prevent the wide adoption of the new surfacing combination, according to the APWA announcement. Current experiments have been mixing rubber with asphalt at a ratio of 5 to 7½ percent of the weight of asphalt.

A Marathon Runner...like Cast Iron Pipe...has

To run 26 miles over hill and dale in 2½ hours requires strength and endurance,– in a word, *stamina!* To carry on for 100 years or more, as cast iron water and gas mains are still doing in 38 American cities, also requires stamina. These rugged mains, installed in the days of horse-drawn vehicles, are now withstanding the traffic-shock of multi-ton trucks and buses and the soil disturbances caused over the years by underground construction of sewers, power lines, telephone conduits and subways. Yet cast iron pipe has survived these changes because of its crushing-strength, shock-strength and beam-strength.

No pipe deficient in these strength-factors of long life should ever be laid in paved streets of cities, towns and villages.

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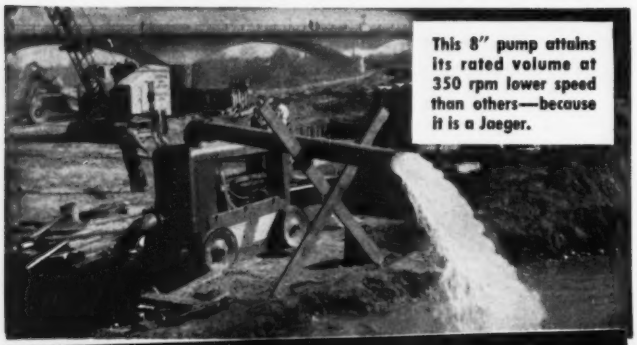

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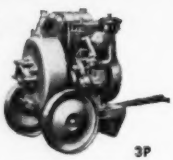

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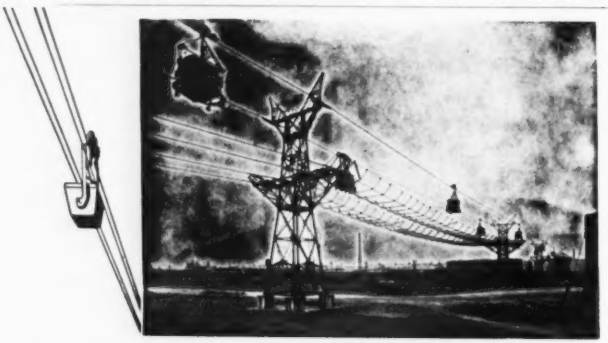

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OBITUARY

Bernhard Christian Halstrom, 56, died Sept. 15 in Miami, Fla. He served with the Army Engineers in World War I, was an engineer-architect, and worked with the Treasury Department's procurement division, 1932-42, after which he entered private practice.

William F. Griffin, 60, assistant airway engineer at the Washington National Airport for 14 years, died Sept. 28 in Washington, D. C.

Frank H. Helms, 69, engineer for Charlotte, N. C., for the last 35 years, died Oct. 1.

Samuel T. Culliton, 75, pioneer railroad contractor of the Pacific Northwest, died Sept. 28 at Seattle, Wash. He and his brothers, the late C. C. and Jack Culliton, founded their firm in Seattle in 1909, built the first railroad on Vancouver Island in Canada. The firm also constructed a number of railroad bridges in Oregon before its dissolution during the 1930's.

Jens Jensen, 91, landscape architect and father of the Chicago park system, died Oct. 2 at Ellington Bay, Wis. Born in Denmark, he came to America at 24. In Chicago he was West Park superintendent from 1906 until 1920, also supervising architect. He laid out and developed Columbus and Humboldt parks, the Garfield Park Observatory, and was instrumental in establishing the Cook County forest preserve belt. In 1920 he went into business for himself, and designed the Edsel Ford estates in Michigan, the Julius Rosenwald and Ogden Armour estates near Chicago, and Lincoln Memorial Garden, Springfield, Ill.

Edward J. Mershon, 60, a civil engineer associated with the Pittsburgh-Des Moines Steel Co. since 1916, died Sept. 25 while on a visit to Peterborough, Ont. He specialized in the design of elevated steel tanks and steel grandstands. He was a C.E. graduate of Cornell University, 1914.

Thomas R. Beeman, 70, of the Pittsburgh District, Corps of Engineers, U. S. Army, died Sept. 27 in Pittsburgh. He was head of the Relocations Branch, Engineering Division, currently engaged in the relocation of the Pennsylvania Railroad in the Conemaugh Reservoir area. He went to the Pittsburgh district in 1937, after serving as county engineer, King

(Continued on page 75)

Obituary . . .

County, Wash., and city engineer in Seattle. He was a graduate of Texas A. & M. He spent two years overseas during World War I.

Harry F. Miter, 74, vice-president and Cleveland district manager of the Austin Co., engineers and builders, died Oct. 5. He received a civil engineering degree at Rensselaer Polytechnic Institute in 1899 and started his career with the King Bridge Co. in Cleveland. He later worked on many railroad extensions, including the conversion of the Nickle Plate from single to double tracks between Chicago and Buffalo.

Mr. Miter joined Austin in 1917 and was put in charge of estimating and design. He supervised the construction of many important plants and in the second world war he was active in the design of aircraft factories in this country.

Alfred V. Bowhay, 65, special assistant to the San Francisco, Calif., city engineer, died Sept. 25. A graduate of the University of California engineering school, he had worked for the city since 1916.

Charles H. Newell, manager since 1935 of the Texas Highway branch, Associated General Contractors of America, Austin, Tex., died Oct. 3 in Denver, Colo. He had helped his members build up one of the most active highway contractors units in the country.

• **Inter Agency Committee**—The fourth regular meeting of the New England-New York Inter-Agency Committee met at Dartmouth College, Hanover, N. H. recently. Governor Sherman Adams of New Hampshire was host and the principal speaker. He presented in detail for the representatives of the New England-New York states and the seven federal agencies the problems of the Granite State in the natural resources survey.

Col. F. F. Frech, the committee chairman, pointed out that wide public interest is being displayed by the citizens of the Northeast as a result of the first public hearing of the committee held in Springfield, Mass., in June—shown by the receipt of hundreds of letters, telegrams, and suggestions sent to committee offices in Boston and New York.

Col. Frech went on to say that this public interest would help create a more complete and better coordinated final report.

Improve working conditions...
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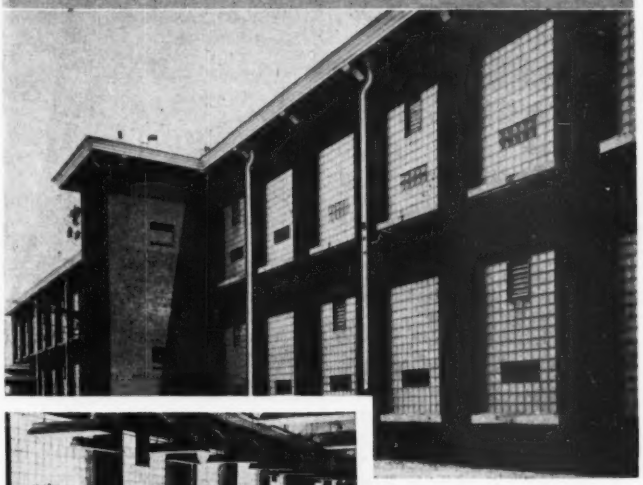

IN THIS SASH REPLACEMENT job, the Poinsett Mill of Abney Mills, Greenville, S. C., PC *Fuochtone* Glass Blocks were used with Vue block inserts for vision. Ventilators were also included in some of the panels—making this installation a practical example of the PC Vision-Lighting Plan. *This plan consists of orientation-keyed areas of PC Fuochtone Glass Blocks (selected for sun or non-sun exposure) used with vision-ventilation areas as required.*

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For complete information write today to: Charles Nelson, Personnel Engineer, Dept. A, Virginia Department of Highways, Richmond 19, Virginia.

MEETINGS

Reginald T. Hurdle, Billings, Mont., consulting engineer has been elected president of the Montana section, American Society of Civil Engineers. He succeeds William J. Wenzel. A. A. Van Teylingen was elected vice-president of the north-central Montana branch. Other vice-presidents are William P. Price, Jr., and Charles F. Palmetier, Jr., Oliver C. Reddy of Billings was elected secretary-treasurer to succeed George J. Hoge.

Ohio Section, American Water Works Association, has elected J. L. Hoffman, of the Akron Water department, as chairman to succeed A. S. Hibbs, manager of the Chillicothe water works. Also elected were C. E. Beatty, Middletown, vice-chairman; M. E. Druley, Wilmington, secretary; George J. Van Dorp, Toledo; D. D. Heffelfinger, Alliance; and Ervin Leist, Circleville, trustees.

The National Constructors Association, an organization of firms engaged in the engineering and building of oil refineries, steel mills and chemical plants on a national scale, has submitted the names of three of its members who would be available to serve on the Construction Advisory Board of the Office of Price Stabilization. The names were submitted at the request of T. G. Letchworth, chief of the OPS Construction Section by J. F. Pritchard, association president. Those named are G. F. Bayes, vice-president of M. W. Kellogg Co.; T. C. Williams, vice-president of Stone & Webster Engineering Corp. and George Carvelin, vice-president of Koppers Co.

Twenty-four representatives of the Latin American republics received a welcome from President Truman at the White House Oct. 1. They were members of the directing council of the Pan American sanitary organization. The Pan American Sanitary Bureau, founded in 1902, is the oldest international public health organization and is made up of all 21 republics of the Americas. The council, which meets annually, administers the Pan American Sanitary Code, signed in Havana in 1924, and the only treaty in existence that has been ratified by all 21 American republics. Since 1947, the Pan American Sanitary Bureau has served as the regional office of the World Health Organization, of which the United States is a member.

U. S. delegates to Lima

The official U.S. delegation to the fifth Pan American Highway Conference in Lima, Peru, last week consisted of:

Delos W. Rentzel (chairman of delegation) under-secretary for Transportation, Department of Commerce; John J. Dempsey, member Public Works Committee, U.S. House of Representatives; Robert B. Brooks, consulting engineer, St. Louis; Hal H. Hale, executive director, American Association of State Highway Officials; Edwin W. James, Bureau of Public Roads; H. H. Kelly, Office, of Transportation and Communication Policy, Department of State.

With the delegation are four technical advisers: Chester Cotton, Austin-Western Mfg. Co., Aurora, Ill.; Ralph A. Moyer, chairman, Highway Research Board; Paul Reinhold, president, American Road Builders Association; Francis C. Turner, assistant to commissioner of Public Roads, Department of Commerce.

CALENDAR

National Council of State Boards of Engineering Examiners, Statler Hotel, Boston, Mass., Oct. 21-24.

Engineers' Society of Western Pennsylvania, water conference, William Penn Hotel, Pittsburgh, Pa., Oct. 22-24.

American Society of Civil Engineers, annual meeting, Statler Hotel, New York City, Oct. 22-25.

National Standardization Conference, Waldorf-Astoria Hotel, N. Y. City Oct. 22-24.

American Association of State Highway Officials, Fontenelle Hotel, Omaha, Neb., Oct. 23-26.

American Institute of Steel Construction, Inc., annual meeting, the Greenbrier, White Sulphur Springs, West Va., Oct. 22-25.

California section, American Water Works Association, Fairmount Hotel, San Francisco, Oct. 23-26.

Florida Sewage and Industrial Wastes Association and Florida section A.W.W.A. Princess Issena Hotel, Daytona Beach, Fla., Oct. 28-31.

Structural Clay Products Institute, Greenbrier Hotel, White Sulphur Springs, W. Va., Oct. 29-31.

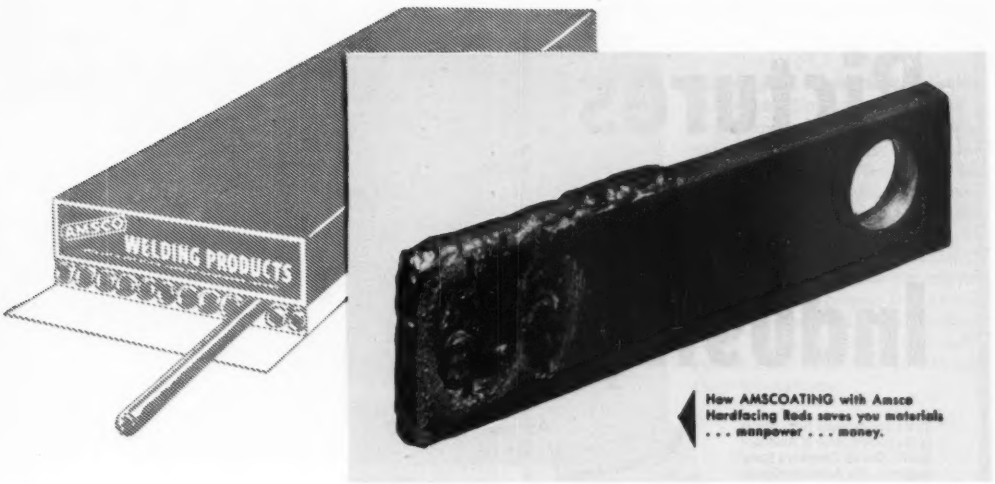
American Concrete Institute, regional Sheraton Hotel, St. Louis, Mo., Oct. 30-31.

American Public Health Association, annual meting Civic Auditorium, San Francisco, Calif., Oct. 29-Nov. 2.

Conference on Coastal Engineering, Rice Hotel, Houston, Tex., Nov. 7-10.

National Conference on Industrial Hydraulics, Sherman Hotel, Chicago, Nov. 8-9.

Conference on Atomic Installation in Buildings, Building Research Advisory Board, National Acadaemy of Science auditorium, Washington, D. C., Nov. 27-28.



How to make short work of a long shutdown!

This AMSCOATED Pulverizer Hammer has cut replacements over 90% to date!

Big savings are bound to result when you can reduce shutdowns and replacements. For example, coal pulverizer hammers in a Southern plant were lasting about 5 days before a complicated dismantling job for replacement was necessary. Some hardfacing methods had been tried, but the results still weren't good enough to bring costs down to earth.

Recently test hammers were AMSCOATED with an Amsco Rod specially developed for this type of service . . . and the hammer you see above is now making service life history! Why?

The plant superintendent reports that the AMSCOATED hammers are lasting 14 times longer than plain hammers . . . over twice as long as hammers hardfaced by any other method tested . . . that they've been in service 72 days and are still going strong!

This actual example is one of many AMSCOATING applications that are resulting in *lower* maintenance and replacement costs. . . . *higher* production. Write today for catalog on dollar-saving AMSCO rods and the name of your nearest AMSCO distributor.

AMSCOATING...stands for control of wear by Hardfacing...

Hardfacing rods—and recommendations for their use—are as sound as the manufacturer who makes them. AMSCO has been fighting wear for a half-century—first with Manganese Steel, and later with AMSCO Hardfacing Products.

If you have a problem of wear caused by impact, abrasion, heat or corrosion . . .

Find out how AMSCOATING can save you materials . . . manpower . . . money!

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Other Plants: New Castle, Del., Denver, Oakland, Cal., Los Angeles, St. Louis. In Canada: Joliette Steel Division, Joliette, Que.

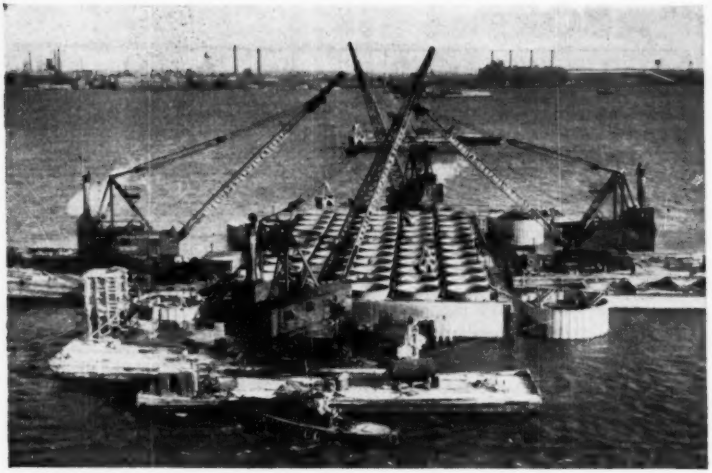
Pictures from Industry

These are excerpts from stories in the current issue of American Hoist & Derrick Company's house magazine, the American Crosby Clipper. If your business involves the use of hoists, derricks, locomotive cranes, revolver cranes, Crosby Clips or other equipment in our line, why not let us put your name on the mailing list. Use coupon on right hand page, to start with the current issue.

Permanente builds a silo. The slim 90-foot steel tower seen at right enabled Permanente Cement Co. to set some speed records on a big construction job in Seattle. It's an American Portable Material Elevator, modern replacement for the old wooden elevator tower. The contractor, Juney Johnson Co., Seattle, used it to pour all concrete for this 30,000-barrel storage unit in 8 days. Elevator was then ready to be lowered, moved, quickly re-erected for the next job.

No job for a lady? That's what a lot of people said, when Mrs. E. M. Vye of Calgary, Canada started selling construction machinery for Wilkinson & McLean, Ltd. But here she is, with an American Portable Material Elevator she just sold, and one of her many friends among construction men. Around the world, you'll meet no better people than American Hoist's distributors!

The AMERICAN HOIST line includes: Hoists • Derricks • Locomotive Cranes • Crawler Cranes • Revolver Cranes • Portable Material Elevators



Digging 60 underwater wells at once. To sink the world's largest-area caisson, for the Delaware Memorial Bridge, contractor Merritt-Chapman & Scott used four barge-mounted American Revolver Cranes. *Crosby Clipper* story tells how the cranes' clamshells dug 60 vertical tunnels down through hard-packed clay, sunk the caisson to 106 feet. On biggest jobs everywhere, contractors look to American Hoist for equipment that safeguards their bids, their profits and their reputations.

Get in the scrap! Heeding that urgent plea, Robinson Iron & Metal Co., Omaha, ordered a 3/4 yard American Crawler crane. After 2 hours for fitting a magnet, first day's work ended with 150 tons of melting steel loaded in rail cars. With 30,000,000 tons of scrap needed for 1951, such speed really helps!

"Big Boom" sends locomotives to West Africa. The scene above is at Charleston, N.C., where four 72-ton diesel locomotives were put aboard the *African Glen* for shipment to Douala, West Africa. Charleston wins such business with its great 120-ton American Stiffleg Derrick, affectionately dubbed "Big Boom". It is the biggest commercial derrick of its type on the Atlantic Coast south of Philadelphia . . . and a member of the largest-selling line of derricks in the world.

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LABOR

Okay dropping union shop elections

In spite of bitter rearguard action by a Congressional group still out to repeal the whole law, Congress last week finally approved and sent to the President amendments to the Taft-Hartley act that will eliminate special union shop elections.

Debated heatedly for some months (ENR Aug. 9, p. 59) the amendments finally passed by the House and sent up to the White House are not entirely to the liking of AFL construction unions, who were supporting a more liberal change.

However, the amendment, of particular significance to construction, provides:

Any union holding collective bargaining rights may seek a union shop agreement from management, without requiring that workers participate in a separate union-shop election;

A contractor may sign a union-shop agreement with a union, even though work has not yet started (and thus there are no workers to choose a union);

Validates thousands of union shop elections conducted by the National Labor Relations Board before top AFL and CIO officers signed non-Communist affidavits;

Retention of provisions whereby workers can force an election to abolish an existing union shop by getting 30% of workers to sign a petition.

• **AFL unhappy**—The AFL unions, in the course of debate and hearings on the amendments, had strongly favored a second bill (S 1973). This measure would not only drop all elections in the construction industry, but would also permit the establishing of a union shop requiring employees to join after seven, instead of 30, days.

This bill, however, was referred to its staff for "clarification" by the Senate Labor-Management subcommittee, and there is no chance it will be reported at this session.

What makes AFL leaders particularly unhappy is that the Congress-approved amendments bail out the CIO (many of whose bargaining election victories were in doubt because of the failure of top officials to sign non-Communist affidavits) opposed this measure.

Lax security protested on U. S. foreign projects

A strong protest against military security procedures on U. S. overseas construction jobs that carefully screens U. S. citizens employed but pays no attention to foreign workers was voiced last week by an organization of construction workers.

James H. Dillon, president of the Construction Men's Association of New York City, called the security regulations at overseas bases "a joke." Dillon's group claims a membership of 10,000 craftsmen and technicians who make careers of work on construction work in foreign areas. It was chartered in New York State in 1943.

"It (security regulation) is a farce," Dillon said in a statement to the press, "for the armed forces to screen every American worker through a rigid loyalty check before they send him abroad, and then to hire native workmen by the thousands at the job site without any screening whatsoever.

"Every American workmen on jobs in Morocco, Casablanca, Tripoli and . . . the Philippines . . . knows that many of the locally hired help are Communists. But security officials blandly ignore our warnings . . . and . . . feel that our secret projects are safe because American workers have been carefully screened.

"I insist that it is possible to give locally hired help the same screening that American workers must undergo."

Dillon, who said he based his charges on 25 years experience in foreign lands as superintendent and personnel manager, suggested that such screening of local help could be easily accomplished, since many foreign nations require their nationals to carry identification papers; and that there would be little opposition to such a screening procedure.

NLRB clarifies labor "free speech"

If you do not permit solicitation for union membership on your job—yet you call the workers together on the job and talk against the union—you may have to give the union (if it asks for it) the same chance to talk to the workers.

That is the import of a decision of the National Labor Relations Board in which it set aside a bargaining election lost by the AFL Retail Clerk's union at Bonwit Teller department store in New York.

NLRB makes this clear: The decision does not mean that in all cases an employer must accede to a union request to be allowed to answer—on the job—any anti-union speech made on

the job. But, where granting such a request is the only way the union will have an equal opportunity to give the workers its side of unionism, then the employer must grant it.

NLRB emphasized it is not setting up any general rule to follow, but will decide on a case-by-case basis when the circumstances require.

Whether NLRB will be allowed to stick to this view (one member dissented) remains to be seen. Bonwit Teller is appealing to the courts for a reversal.

AEC denies labor waste, welcomes investigation

The Atomic Energy Commission would welcome a "competent" investigation of alleged illegal closed-shop labor practices and labor waste at the Savannah River H-bomb site, according to testimony given before a Congressional committee.

Rep. W. M. Wheeler, Georgia Democrat, made the charges after a personal visit to the site of the $1.2 billion construction project (ENR Oct. 11, p. 88).

AEC spokesmen, who discounted Rep. Wheeler's charges, said they would welcome an investigation when they appeared before a House Appropriations subcommittee to ask for an additional $484 million for the Savannah River project.

$4.5 million Belvoir work stopped by labor dispute

High-priority construction at Fort Belvoir estimated at $4.5 million came to a stand-still last week as AFL building tradesmen walked off the job in protest to the hiring of non-union labor on other jobs at the post.

The strike, involving some 20 jobs, has been labeled a "work stoppage" by the union. Nine other open shop projects valued at $500,000 are going on at Belvoir. The union is trying to force these jobs into union hands.

According to Armed Service Procurement Act of 1947 construction contracts are awarded to the "lowest responsible bidder." The AFL wants the Defense department to modify the regulation to specify that the bidder must be union to be "responsible." Union and defense officials will meet to reach a settlement, but any change in the procurement regulations will have to come from Congress.

Top military officials are not only concerned with the Fort Belvoir dispute but are afraid similar incidents may spread throughout the country. A year ago AFL carpenters at Belvoir made a similar protest, and last summer union workers left their jobs at Keesler

(Continued on page 82)

How Burgess Norton Mfg. Co. Saved On Construction Costs, Erection Time with

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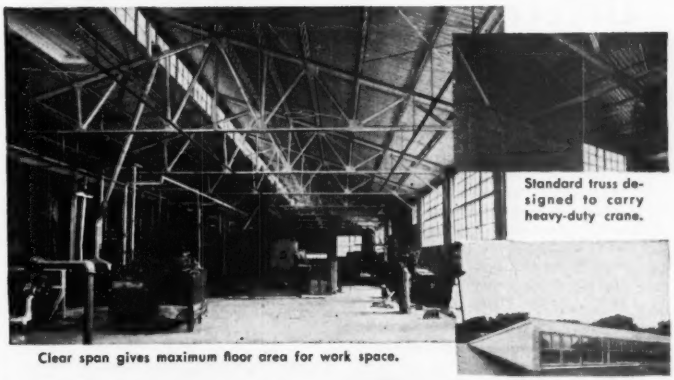
You can experience the same results for your demands with Steelcraft Standardized Parts and Sections.

Engineering experts will diagnose your situation, recommend rigid frame or truss-design structures, specify ventilation, insulation, material-handling features, wall-construction of any materials . . . according to your needs.

Have your Architect, Engineer, or Contractor consult us for complete information . . . at no obligation.



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Steelcraft addition (right) matching original structure (left) demonstrates amazing adaptability.

Monitor easily adapted to roof structure.

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"GUNITE" CONTRACTORS
GENERAL OFFICES—ALLENTOWN, PENNA., U.S.A.
MANUFACTURERS OF THE "CEMENT GUN"

Field, Biloxi, Miss., in objection to working next to non-union men.

The projects involved at the Fort Belvoir dispute include Army engineer and research school buildings, shops, laboratories, communications center, roads and other utility construction.

Labor briefs . . .

• **Layoffs follow strike**—Some 600 other workers were released from their jobs last week after 1,500 steamfitters and plumbers continued their strike at the $50 million chemical plant under construction near Dana, Ind., by the Girdler Construction Corp. The strike, which started Sept. 21, concerns retroactive travel allowances for the strikers.

• **Picket Wilmington job**—Construction has been interrupted at the $20 million Merchandise Mart at Edge Moor (near Wilmington) Del., where the Wilmington Building Trades Council threw up picket lines. The Building Trades said its action was aimed at one contracting firm, erecting one wing of the structure, which it accuses of hiring non-union carpenters and subletting masonry work to a non-union contractor.

• **N. C. strike over**—A strike of more than 400 carpenters which tied up work on many major construction projects in the Durham-Chapel area in North Carolina for three weeks has ended. Carpenters returned to work with a new one year contract calling for a raise of 12 cents an hour, bringing their rates to $1.77 an hour. If approved by WSB, six cents of the raise will be retroactive to October 2.

• **Raise for Del. electricians**—Union electricians in Delaware and the employing contractors have agreed upon two 12½ cent wage increases that will boost the workers' rate of pay to $3 an hour on March 1, if WSB approves. The new agreement would put electricians on a par with bricklayers and masons, said to be the only craftsmen currently receiving $3 an hour in the state.

• **Seek law enforcement**—The Youngstown, O., Building Trades Council, charging that unlicensed electrical wiring work creates dangerous fire hazards in city public schools, has demanded that city officials enforce building code provisions against the Youngstown Board of Education. Building trades specifically charged that the education board hired a carpenter to make 14 new electrical installations in the city schools. The carpenter in question is a regular employee of the board, but union officials said their protest on his work was "ignored" by board officials.

Backlog shoots up 15.4% in 9 months; $60 billion in construction on tap

Proposed construction projects are stacking up at such a rapid rate that the total construction backlog is now over $60 billion. The Business News Department of Engineering News-Record reported that the construction backlog for the first nine months of this year is 15.4% above the December, 1950 total.

Total backlog in December, 1950 was $52,113 million. As of September 30, it stood at $60,157 million.

During this same period, the backlog of private construction jumped 24% from $18,250 million in December, 1950 to $22,684 million on September 30, 1951. Public construction backlog increased 11% from $33,473 million to $37,473 million during the same nine month period.

The areas of greatest increase in the backlog were industrial building, public unclassified, federal government, private unclassified and commercial building.

• **Up 48%**—Industrial building piled into the proposed projects hopper boosted this category 48% in the last nine months, from $5,753 million last December to $8,492 million in September.

Airports and hydroelectric projects helped push the public unclassified backlog 36% higher in nine months, up from $4,717 million in December to $6,402 million on September 30.

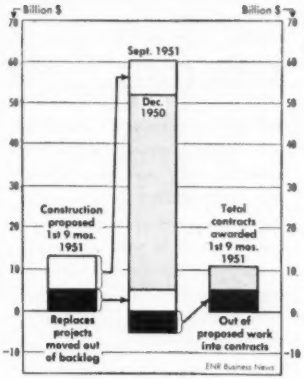
Federal government projects in the backlog climbed 22%. They were listed at $9,754 million in December, $11,919 million in September.

Transmission lines, pipelines, railroads, and airports were strong factors in the private unclassified construction climb from $5,489 million in December to $6,305 million in September. Last month's cumulative total was 15% above December.

• **Commercial climbs**—The backlog of commercial building climbed 13%, from $6,963 million in December to $7,835 million in September.

During the same nine months, the backlog for bridges was up 16%, from $1,647 million to $1,903 million; streets and roads, up 11%, from $4,598 million to $5,113 million; public buildings, up 9%, from $12,050 million to $13,092 million; sewers, up 6%, from $2,182 million to $2,322 million.

The backlog for earthwork, irrigation and drainage slipped a little, declining less than 1% from $7,282 million to $7,271 million. Water works showed a 1% drop from $1,386 million to $1,371 million.



For the first nine months of 1951, total construction contract awards were $10,724 million, up 20% over the same period in 1950. Of the $10,274 million total, $5,173 million (48%) came out of the backlog.

Cement production up 4% over August, 1950

The output of 22,685,000 barrels of finished portland cement in August was 4% greater than the production reported for August, 1950, the Bureau of Mines reported.

Mill shipments totaled 25,852,000 barrels, representing a 3% increase over shipments in August, 1950, while stocks of 11,448,000 barrels were 19% greater than those of a year ago.

Mills smash production records for steel

Three steel records fell when the third quarter production figures were added up, the American Iron and Steel Institute reported this week.

Production of raw steel by domestic mills in September, in the third quarter and for the first nine months of this year was higher than ever before in comparable periods.

September production totaled 8,644,000 tons of ingots and steel for castings. This compared with 8,204,997 tons in the same month of 1950, which was the previous record for September, and with 8,733,592 tons for August.

• **Third quarter record**—Third quarter production of 26,056,839 tons of raw steel this year was 1,526,746 tons higher than in the third quarter of last year, which was the previous third quarter peak.

However, the total was 535,141 tons below the second quarter of 1951. This is traced to the customary seasonal decline in the summer.

Nine month total posted was 78,328,742 tons, this was 9.2% over the amount produced in the comparable 1950 period which had itself set a record.

During September, steelmaking furnaces operated at an average of 101% of rated capacity, compared with 98.6% in the preceding month and 99.4% in September, 1950.

Operations for the first nine months of 1951 averaged 100.5% compared to 92.1% in the first three quarters of 1950.

NPA says "No" to 2,196 4th quarter applicants

The National Production Authority announced that it has turned down applications for 2,196 projects for which controlled materials were sought in the fourth quarter of this year.

This doesn't mean these projects are "dead." Applicants can refile for material allocations in later quarters. The NPA "No" for the fourth quarter could become a "Yes" in the first or second quarter of 1952. Applications for the first quarter of next year should be filed as soon as possible, the agency said.

State hospitals, police and fire stations, churches and even jails were on the list of projects denied. The majority of the cases seemed to cover stores, offices and other types of commercial construction, however.

Money for construction

Financial news included a good promise of construction work coming up.

• **Harshaw Chemical Co.**—Offered 40,000 shares of preferred stock at $103 a share. The money will be used by the firm for expansion.

• **New York Housing Authorities**—Awarded issues of short-term notes amounting to $56.5 million. The 18 housing authorities offered $79.6 million.

• **New Jersey Turnpike Authority**—Received bids this week on $35 million additional bonds to complete their program. The Authority previously sold $220 million.

• **Toledo, Ohio**—Voters approved issuance of bonds amounting to nearly $21 million for public improvements. Broken down, the money will go

toward waterworks improvements, a secondary sewage treatment plant, a new airport and other public works.

• **Detroit, Michigan**—Will join with state and county officials in marketing an $80 million bond issue to finance further construction of joint city-county-state express highways. Previously, about $40 million had been raised and applied to the $134 million cost of the John C. Lodge and Edsel Ford expressways.

"Fannie Mae" steps into defense housing picture

The Federal National Mortgage Association, which has set aside $200 million to enter into advance commitments for programmed defense housing, this week told how it will divide the money.

Administrator Raymond M. Foley, of the Housing and Home Finance Agency, announced that $25 million will be used for disaster housing, $50 million for military housing to be built under the Wherry Act and $125 million for programmed defense housing in designated critical defense housing areas.

The $125 million allocated by "Fannie Mae" to defense housing won't be enough. The Atomic Energy Commission gets $20 million out of the total for its housing needs. The remaining $105 million will allow prior commitments for only about half of the amount of mortgage loans made for such housing by any individual lender.

Business briefs . . .

• **Concrete awards**—The volume of portland cement concrete pavement awarded in September dropped 3% from the August total, the Portland Cement Association reported.

• **Cost index steady**—Fruin-Colnon Contracting Co., of St. Louis, reported that its building cost index for September remained at the August reading of 435. This is based on 1913 equals 100. The index was 426 in April, 431 in May, 433 in June and July and 435 in August. September, 1950 reading was 416.

• **Wage lists**—The Bureau of Labor Statistics, U. S. Department of Labor, Washington 25, D. C., is offering free its publication showing union wage scales in 77 cities. Listings show July 1, 1951 union rates by trade as well as the weekly hours of work before overtime rates become effective.

• **CMP switch**—Aluminum supplies will be taken from the military stockpile to fill fourth quarter Controlled Materials Plan allotments of the metal, the National Production Authority announced.

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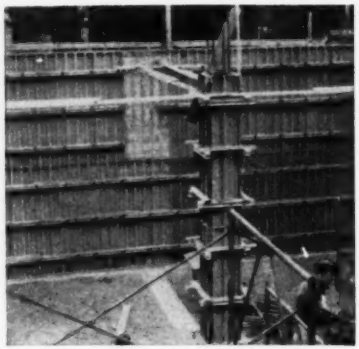

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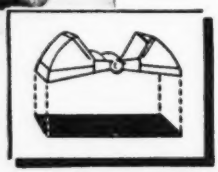

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UNIT PRICES BID BY CONTRACTORS

Road widening and resurfacing, Indiana

For 23.01 miles of bituminous resurfacing and 20 miles of concrete widening in Greenfield District, Delaware, Henry, Randolph, Wayne and Madison Counties in Indiana, Wayne Paving, Inc., took the contract with a low bid of $744,595. R. Bower, Chief Engineer, State Highway Commission of Indiana opened bids June 26, 1951.

All materials are furnished by the contractor. Work was to start immediately and be completed in 190 days.

Wages to be paid range from $1.20 for skilled labor, $1.00 for semi-skilled to $0.90 for common labor.

Bidders include:

1C Wayne Paving Co., Inc., Ft. Wayne, Ind. $744,595
2 W. L. Magaw, Richmond, Ind. 745,492
4 Wm. D. Vogel Constr. Co., Indianapolis, Ind. . . 778,498

Bids 6-26-51 Items	Unit	Quantity	Unit prices 1 C	2
Surface removal	sy	3,639	$0.50	$0.25
Drilling holes	ea	10,310	0.18	0.20
Bits mat'l for underseal	gal	123,710	0.17	0.20
Concrete patches	sy	8,635	10.25	9.75
Cement conc widening	sy	54,310	4.15	3.95
Subgr tr mat'l, type II	cy	3,710	3.75	3.00
Bit mat'l, for sig cracks & jnts	gal	4,446	0.70	0.50
Bit mat'l for prime	gal	53,463	0.14	0.16
Covering aggregate	ton	917	3.13	3.25
Bit concrete (AH) binder	ton	37,665	6.50	6.65
Bit conc (AH) surf type "B"	ton	18,017	7.12	7.60
Reconstr conc curb	lf	952	2.25	3.00
Reconstr conc sidewalk	sy	501	3.75	5.00
1" Pref bit exp jnt	lf	136	1.10	0.50
Private drive pavement	sy	21	5.25	5.00
Castings adj to grade	ea	59	20.00	20.00
Monuments re-establ.	ea	3	10.00	10.00
Monuments type "A"	ea	1	20.00	30.00

Traffic surface, N. Dakota

Heavy excavation, averaging 54,535 cy per mi with quite a bit of rock to be moved, is the outstanding feature of 18.325 mi of grading, traffic surface gravel and structures on North Dakota Highway 31N from New Salem North in Oliver and Morton Counties, let June 8, 1951 by North Dakota State Highway Department. The grading contract drew 9 bidders and a low of $259,173. Work started June 25 and had to be completed in 150 16-hr working days. The job is half a mile from the railroad.

Wage rates range from $1.80 for skilled labor, $1.50 for semi-skilled to $1.10 for common labor.

Equipment in use on the project includes: 2 28-cy Garwood scrapers, 2 17-cy Garwood scrapers, 2 15-cy Terra Cobras, 2 sheepfoot packers, 1 Garwood ripper, 2 AC14 motor graders, 2 D8 Caterpillar tractors, 3 HD19 International crawler tractors, 2 HD14 crawler tractors, 2 HD7 crawler tractors, 1 #75 Caterpillar tractor 2 2,000-gal water trucks, 2 ¾-ton trucks, 1 ½-ton service truck and dozer attachments for tractors.

Bidders on the grading include:

1C Murphy & Smestad Constr. Co., Fargo, N. Dak. $259,173
2 Walter Hamann, Richardson, N. Dak. 264,646
9 Inland Constr. Co., Omaha, Nebr. 349,804

Bids: 6-8-51 Items	Unit	Quantity	Unit prices 1 C	2
Roadway excavation	cy	999,354	$0.18	$0.167
Water for compact	M gal	12,896	0.10	0.81
Traffic service grav	cy	23,922	1.17	1.76
Seeding type "B"	ac	383.0	10.00	5.75
Obliterate old roads	lf	10,000	0.10	0.05
Rem exist str. Sta. 131+81	ls		300.00	294.00
Sta. 461+53	ls		300.00	294.00
Concrete monuments	ea	8	5.00	19.20
Relay pipe culv (all sizes)	lf	1,446	1.75	2.35
18" RCP culverts	lf	12	3.35	3.50
24"	lf	1,678	5.26	5.04
30"	lf	1,190	7.06	6.52
36"	lf	564	10.20	8.90
42"	lf	10	12.75	12.00
72"	lf	66	30.20	25.22
18" RCP flared ends	ea	1	29.00	28.00
24"	ea	54	42.85	38.53
30"	ea	24	56.65	51.66
36"	ea	20	98.00	93.00
42"	ea	2	120.80	110.00
72"	ea	2	341.00	295.50
18" CMP culverts	lf	892	3.13	3.28
24"	lf	212	5.15	4.73
Std conc cattle-pass, inter secs	lf	174	26.35	22.32
end secs	ea	6	304.00	251.33

Structures

1C Rue Constr. Co., Bismark, N. Dak. $23,801
2 Lindberg Constr. Co., Jamestown, N. Dak. 26,034

Items	Unit	Quantity	Unit prices 1 C	2
Treated timber	Mfbm	0.5	$700.00	$400.00
Tr timb piling	lf	1,220	4.00	4.00
Cl 1 exc	cy	175	10.00	3.00
Cl A—1 1/2" conc	cy	90.89	75.00	90.00
Reinf steel	lb	10,471	0.20	0.20
Est cost of temp Xing & det at sta. 718+70	fa		500.00	500.00
at sta. 759+90	fa		500.00	500.00
Move existing bridge at sta. 718+70	ls		2,800.00	4,500.00
Move existing bridge at sta. 759+90	ls		2,800.00	4,000.00
Cl 2 excavation	cy	131	10.00	5.00

Bank protection, Oregon

All five bids on construction of bank protection works, including a steel-rail drift barrier along the left bank of the Middle Channel, Willamette River at John Smith Island Location, were above the Contracting Officer's estimate. Col. T. H. Lipscomb, District Engineer, Corps of Engineers, U. S. Army, Portland, Ore., received bids June 15 and awarded the contract to the next to low bidder, Ramsey Construction Co. at $51,270.

Completion was required in 75 calendar days after notice to proceed, and work started June 21. Prevailing wage rate on the job is $1.75 for common labor.

Bidders include:

1 G. D. Dennis & Sons, Portland, Ore. $48,348
2C Ramsey Constr. Co., Corvallis, Ore. 51,270

Bids 8-15-51 Items	Unit	Quantity	Unit prices 1	2 C
Clearing	acr	1	$1,500.00	$1,000.00
Bank excavation	cy	4,210	0.60	0.50
Toe-tr exc	cy	6,570	0.95	0.95
Dumped-stone revet	cy	7,390	4.00	5.74
Inst steel-rail piling & brace piling	lf	7,630	0.95	1.00
Inst st-rl wales	lf	650	1.00	5.00
Inst st-rl braces	ea	31	20.00	25.00

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Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager — *J. A. MAHONEY, Reports* — *M. R. ROESSLER, Statistics*

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

Conn., Milford—B.A. 11/5—Town, Town Hall, sewage treatment plant and sewage pump station. Plans deposit $50. CD 12/19/50.

BIDS ASKED—BUILDINGS

Conn., Milford—SCHOOL—B.A. 10/22—Town Bd. Educ., Town Hall, Woodmont Elementary School, Brewster Rd. Plans deposit $25. CD 1/5.

Mass., Brockton—HOUSING — B.A. 10/24 — Brockton Housing Auth., Samuel Sherman, chn., Main St., 50 housing units, N. Main and Clifford Sts., Proj. 200-2, $500,000, Bourne, Connor, Nichols & Whiting, 177 State St., Boston, archts. CD 9/11.

R. I., South Kingston—HIGH SCHOOL—B.A. 10/30—Town, high school, Hazard Property. Plans deposit $50. CD 3/22, under LB.

Conn., Waterbury—SCHOOL—B.A. 10/31—State P. Wks. Dpt., Hartford, B/A-R-83, Vocational School, Watertown Ave. Plans deposit $25. CD 7/19, under LB.

▲ **Mass., Framingham** — APARTMENT — Bids Asked — Buckminster Realty Co., c/o Joel Eastman, 89 State St., Boston, fifty buildings, 2 story, 100 unit apartment, Union Ave., $1,000,000, Charles R. Greco, 11 Beacon St., Boston, archt. CD 10/8.

Mass., Westfield—PLANT—Bids Asked—H. Duys & Co., Inc., 410 Asylum St., Hartford, Conn., tobacco processing warehouse. $170,000. A. R. Sharpe, Columbia Rd., Willimantic, Conn., archt. CD 9/25, under Mass., West Springfield.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Consolidated Constructors, Inc.**, 807 Congress St., Portland, Me., LB $1,530,000. 100 bed hospital, at Air Force Base, LIMESTONE, ME. U. S. Eng., 857 Commonwealth Ave., Boston, Mass., Bids Oct. 5. CD 9/28.

MASSACHUSETTS—Commonwealth of Mass., Dpt. Pub. Wks., 100 Nashua St., Boston.

Charles Capone Constr. Co., Inc., 44 Welsmere Rd., Roslindale, Mass. LB $73,935, est. $81,000. hy. work Belgrade Ave., Roslindale, Suffolk Co.

John P. Condon Corp., 105 Coolidge Hill Rd., Watertown, Mass. LB $67,030, est. $75,000, hy. work Massachusetts Ave., Boston, Suffolk Co. Bids Oct. 2. CD 9/18 and 9/19.

CONNECTICUT—State Hy. Comr., State Office Bldg., Hartford.

D. Arrigoni, 605 Main St., Middletown, Conn., LB $70,401, 93 lin. ft. slope paving Causeway Route 154 Old Saybrook. Bids Oct. 1. CD 9/17.

BUILDINGS

LOW BIDS AND CONTRACTS

Ernest F. Carisoa, Inc., 1694 Main St., Springfield, Mass. CA $750,000. MANUFACTURING BLDG. and WAREHOUSE, EASTHAMPTON, MASS. Stanley Home Products, Inc., 42 Arnold St., Westfield, Mass.

▲† **George H. Macomber Co.**, 19 Milk St., Boston, Mass., LB (1) completion in 210 days, $1,704,499, (2) completion in 270 days, $1,594,499, 52-NED-2Q WAREHOUSE and RANGE TESTING FACILITIES, ARMORY, SPRINGFIELD, MASS. U. S. Eng., 857 Commonwealth Ave., Boston, Mass., Bids Oct. 2. CD 9/24.

▲ **E. Turgeon Constr. Co. Inc.**, 42 Weybosset St., Providence, R. I., CA $1,350,000. TEMPLE and SCHOOL, Orchard and Butler Aves., PROVIDENCE, R. I., Temple Beth El, 688 Broad St., Providence, R. I. CD 8/24, under LB.

Jack A. Halprin, Inc., 675 State St., New Haven, Conn., LB, $355,332, OCCUPATIONAL THERAPY BLDG., Connecticut State Hospital, B.A.-1-93, MIDDLETOWN, CONN. State P. Wks. Comr., State Office Bldg., Hartford, Conn. Bids Oct. 3. CD 9/19.

▲ **Associated Constr. Co.**, 1010 Wethersfield Ave., Hartford, Conn., CA $1,136,000, Smith Elementary SCHOOL, NEW BRITAIN, CONN. City, New Britain, Conn. Bids Aug. 20. CD 9/26, under LB.

Poriss Constr. Co., 54 Church St., Hartford, Conn., CA $201,424, dual gasoline SERVICE STATION, VERNON, CONN. State Hy. Dpt., State Office Bldg., Hartford, Conn.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

N. Y., Brooklyn—B.A. 10/25—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, Contr. 12, roads, drains, landscaping Owls Head Sewage Treatment Works. Plans deposit $10.

† **MARYLAND**—B.A. 10/26—At office H. J. Spelman, div. engr., Bureau Pub. Rds., Dpt. Commerce, 1440 Columbia Pike, Arlington, Va.

Prince George's Co.—bridge, approaches 0.482 mi. under Defense Hy., Baltimore-Washington Parkway, Proj. 1A2.

BIDS ASKED—BUILDINGS

N. J. Greystone Park—HOSPITAL—B.A. 10/22—State Div. Purch & Property, State House Trenton, Zone 7, general constr. work, plumbing, heating and ventilating and electrical work in connection with completion of Tier No. 3 at New Jersey State Hospital. Plans deposit $25.

N. Y., Flushing—HOUSING IMPRVS.—B.A. 10/23—New York City Housing Auth., 63 Park Row, New York, Zone 28, street and yard imprvs., and topsoil and planting for James A. Bland Houses, Proj. No. NYS 52, in area bounded by Lawrence St., Roosevelt Ave., Prince St., Prince St. extended and the Contract Limit Line to the south of the project. Plans deposit $25 each.

† **Pa., Letterkenny**—MAINTENANCE—B.A. About 10/23—U. S. Eng., 24 St. and Maryland Ave., P. O. Box 1715, Baltimore 3, Md., furnishing, del. structural steel, Depot Maintenance Division Building, Serial No. ENG 18-020-52-10. CD 1/18.

N. Y., Freeport—POWER PLANT—B.A. 10/29—Village Clerk, Municipal Bldg., 46 N. Oceans Ave., Contr. 3, power plant imprvs. Plans deposit $30. Burns & McDonnell Eng. Co., P. O. Box 7088, Kansas City 2, Mo., engr.

Pa., Marietta—HOUSING—B.A. 10/30—Dpt. Army, 24 St. and Maryland Ave., Baltimore, Md., construct, manage, finance housing. Approx. $300,000. George S. Ideli, 117 S. 17 St., Phila., Pa., archt. CD 8/6, under LB.

N. J., Englishtown—SCHOOL ADDN—B.A. 11/2—Manalapan Twp. Bd. Educ., Pine and Harrison Sts., school addn., Pine and Harrison Sts. Plans deposit $25, Pierson MacWilliam, 201 Maple Ave., Metuchen, archts.

N. Y., Brooklyn—HOSPITAL—B.A. 11/14—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, general constr.; plumbing; heating and ventilating; electrical work and lighting for construction of an Out-Patient Bldg. at Cumberland Hospital, N. Elliott Pl., south of Park Ave., Brooklyn Boro. Plans deposit $25.

HEAVY CONSTRUCTION

LOW BIDDERS AND CONTRACTS—

NEW JERSEY—State Hy. Dpt., 1035 Parkway Ave., Trenton.

Union Bldg. & Constr. Co., 631 Main Ave., Passaic, N. J. CA, $994,186, constr. 4 overpasses on Section 2C on Route 26 Extension (Trenton Freeway) Mercer Co. Bids Sept. 5, awarded Oct. 4. CD 9/11, under LB.

State Dpt. Property & Supplies, 1400 N. 9 St., Harrisburg, Pa., rejected bids Aug. 15, repair and replacement of Big Spring Dam, Cumberland Co., PENNSYLVANIA. Project cancelled. L. B. $73,526. CD 8/23, under LB.

Marocco Constr. Co., 231 S. Exeter St., Baltimore, Md. LB $71,292. Contr. 247 D.S. & W., 2,150 lin. ft. 6- to 12-in. c.i. pipe, 4,390 lin. ft. 6 and 8 in. vitr. clay pipe, appurtenances, 2 110 lin. ft. 15- to 20-in. rein. conc. pipe, etc., TOWSON, MD. Comrs. Baltimore Co., Court House, Towson, Md. Bids Sept. 24. CD 9/19.

BUILDINGS

LOW BIDS AND CONTRACTS

Daley & Co., Inc., 1427 Cornell Ave., Trenton, N. J. LB $463,000, constr. TREATMENT and CELL BLOCK WING at New Jersey Reformatory, BORDENTOWN, N. J. State Div. Purch & Property, State House, Trenton 7, N. J. Bids Oct. 2. CD 9/4.

▲ **Brown & Matthews Inc.**, 122 E. 42 St., N. Y. 17, N. Y. CA, $1,000,000, central RESEARCH LABORATORY, on 26 acre site, Park Ave. and Oakree St., SOUTH PLAINFIELD, N. J. American Smelting & Refining Co., 120 Broadway, New York, 7, N. Y. CD 7/17.

▲ **Ragnar Benson, Inc.**, 4744 W. Rice St., Chicago 51, Ill. CA, $26,000,000. 66 in. STRIP MILL, ALLENPORT, PA. Pittsburgh Steel Co., Grant Bldg., Pittsburgh, Pa. Awarded Oct. 1. (Correction). CD 9/10, under CA.

Baltimore Paint & Color Works, 1505 Calverton Rd., Baltimore, Md. Owner Builds. $200 000. 100x200 ft., masonry STORAGE BLDG., 2315-25 BALTIMORE, MD.

Pioneer Engineering Co., 48 Pollack Ave., Jersey City, N. J. CA $350,000. 318x320 ft., masonry WAREHOUSE, Boston St., BALTIMORE, MD. American Can Co., 2610 Boston St., Baltimore, Md.

Young & Adams, Inc., 2 W. 22 St., Baltimore, Md. LB $338,338. 1 story, 78x194 ft. and 58x106 ft., concrete, steel, masonry SCHOOL, Newark Ave., ELKTON, MD. Cecil Co., Bd. Educ., Court House, Elkton, Md. Bids Sept. 18. CD 9/12.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

† **S. C., Charleston**—DEGAUSSING RANGE STATION—B.A. 10/23—Dpt. Navy, Officer in Charge of Construction, Box 365, Naval Base, degaussing range station, construct 2 story, 25x30 ft. frame bldg., with porch and catwalk around it, incl. ext. util.ties, incl. approx. 500 ft. c.i. water pipe and 300 ft. outfall sewer, NOY 29443.

† **Fla., Cocoa**—STORAGE FACILITIES—B.A. 10/24—U. S. Eng., 575 Riverside Ave., Jacksonville, addni. fuel storage facilities Air Force Missile Test Center, Patrick Air Force Base, Eng. 08-123-52-44. Extended date. CD 9/28.

† **Ga., Albany**—B.A. 10/24—Sixth Naval Dist., Charleston, S. C., drainage ditches and sanitary sewer outfall at Marine Corps Depot of Supplies, NOY 29383, Spec. 31085.

La., Cameron—B.A. 10/24—Cameron Parish Police Jury, grading, drainage, bridges 7.2 mi. from Creole to Vermillion Parish line, M. D. Gates, 1745 7 St., Port Arthur, Tex., engr. CD 3/24/49.

† **S. C., Beaufort**—B.A. 10/25—Sixth Naval Dist., Charleston, dredging small boat basin, Naval Hospital, NOY 29449, Spec. 31124. Plans deposit $10.

† **S. C., Charleston**—ELECTRICAL SERVICES—B.A. 10/25—Sixth Naval Dist., Charleston, electrical services Deperming Pier at Charleston Naval Shipyard, incl. some pole lines and underground transmission lines, NOY 29461, Spec. 31134. Plans deposit $10.

† **North Carolina**—B.A. 10/26—U. S. Eng., 308 Customhouse, Wilmington, maintenance dredging 900,000 cu. yd., Wilmington Harbor, Cape Fear River, in Anchorage Basin, Anchorage Basin Approach Channel and between Reach Channel, Inv. No. CIVENG 31-075-52-6.

Ga., Marietta—B.A. 10/29—Cobb County—Marietta Water Auth., Marietta, water pump. station and treatment plant. Plans deposit $50. Merritt & Welker 206 Roswell St., engrs. CD 2/20.

† **S. C., Charleston**—SPRINKLER SYSTEM—B.A. 10/30 Dpt. Navy, Officer in Charge of Constr., Box 365, Naval Base, installing automatic wet pipe sprinkler sys. in portion of 4th floor of Bldg. 16 at Naval Mine-craft base, NOY 29491(NSF). Plans deposit $10.

N. C., Charlotte—TERMINAL—B.A. About 11/1—City, c/o H. A. Yancey, mgr., City Hall, terminal bldg. at Charlotte Municipal Airport. $450,000. CD 2/14.

Ga., Marietta—B.A. 11/5—Cobb County—Marietta Water Auth., Marietta, water supply mlles and reservoir. Plans deposit $20. Merrit & Welker, 206 Roswell St., engrs. CD 2/20.

† **Ga., Macon**—SUB-STATION—B.A. 11/6—U. S. Eng., Post office Bldg., Savannah, constr. Sub-Station No. 2 Robins Air Force base, near here. Extended date. CD 9/12.

† **Va., Norfolk**—RADIO RECEIVING FACILITIES—B.A. 11/13—Pub. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, radio receiving facilities, northwest Virginia at U. S. Naval Communications Station, NOY 28472, Spec. No. 30111. Plans deposit $150.

† **Fla., Cocoa**—DORMITORIES etc.—B.A. About 11/14—U. S. Eng., P. O. Box 4970, Jacksonville, airmen's dormitories and transformer, vault, Air Force

(Continued on page 90)

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects invloved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

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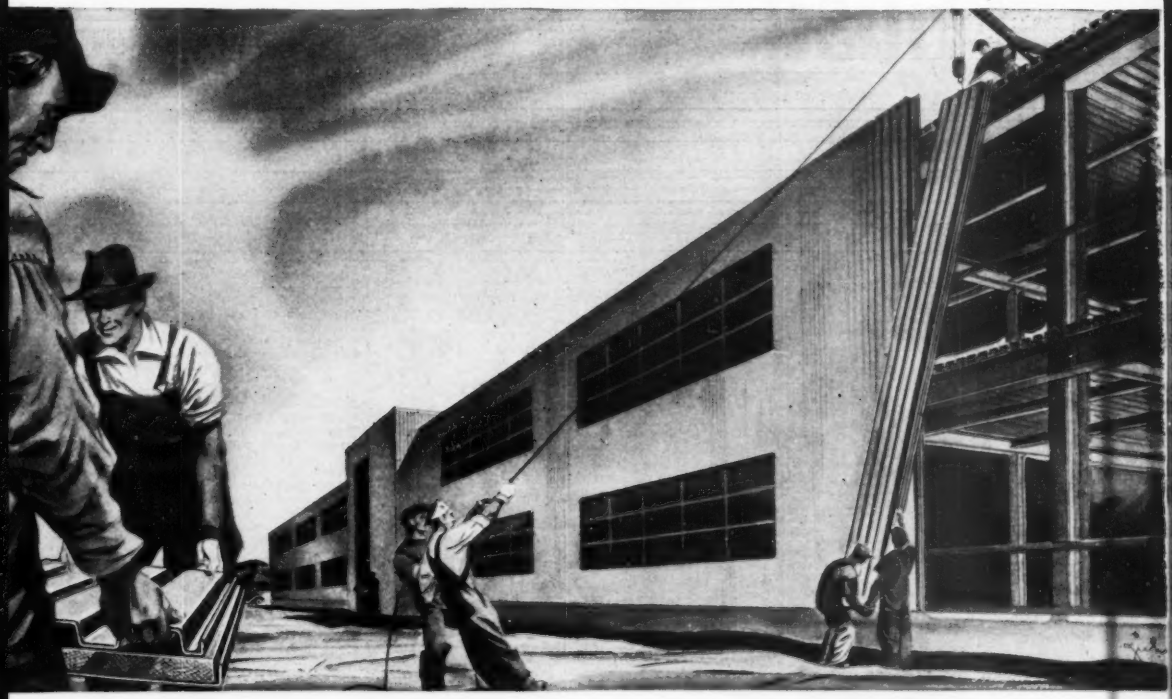

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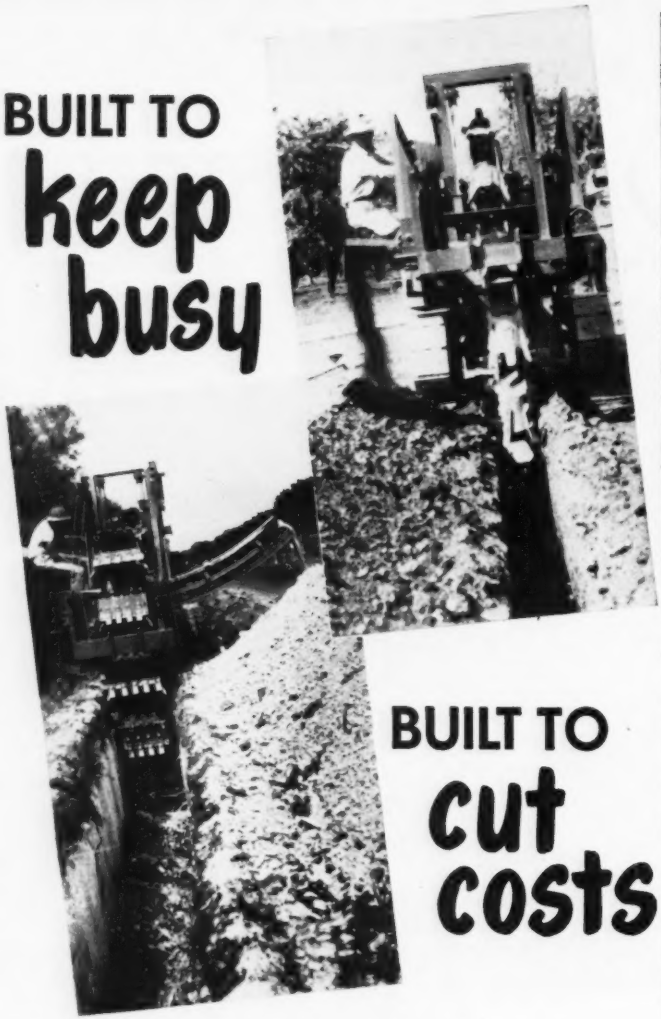

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CLEVELAND
TRENCHERS

(Continued from page 88)

Missile Test Center, Patrick Air Force Base Inv. No. Serial No. Eng 08-123-52-55. CD 4/4.

BIDS ASKED—BUILDINGS

Ga., Atlanta—TERMINAL—B.A. 10/23—Roadway Expressway Inc., 717 Finley Ave. N. W., truck freight terminal. Approx. $100,000. Armistead & Saggus, 330 Candler Bldg., archts.

† **Va., Richmond**—SURGICAL RECOVERY WARD—B.A. 10/23—Veterans Admin., Munitions Bldg., Wash. 25, D. C., Bldg. No. 205 addn. for Surgical Recovery Ward, approx. 19,000 cu. ft., incl. plumbing, heating, ventilating, electrical work, etc., at Veterans Admin. Hospital.

† **Va., Quantico**—CHAPEL—B.A. 10/24—Potomac River Naval Command, Naval Gun Factory, Wash., D. C., alterations, addns. to Bldg. No. 10 to convert part into a chapel, Spec. No. 29809. Plans deposit $10.

Tenn., Chattanooga—HOUSING—B.A. 10/24—Chattanooga Housing Auth., 2600 Fourth Ave., Tenn. Proj. 4-4, 402 housing units. Plans deposit $50. CD 1/3.

W. Va., Morgantown—MUSIC—B.A. 10/25—West Va. University, Morgantown, music bldg. Plans deposit $200. Tucker & Silling, Masonic Temple Bldg., Charleston, archts.

† **W. Va., Natrium**—PLANT, etc.—B.A. 10/28—U. S. Eng., 237 Fourth Ave., Huntington, 18, W. Va., Chemical Corps STB Plant, Eng 46-022-52-62. Extended date. CD 9/24.

Fla., Miami—SCHOOL—B.A. 10/31—Dade Co. Bd. P. Instruction, 275 N. W. 2 St., Kinloch Park Junior High School, $460,000. Plans deposit $35. William H. Merriam, 1022 Maiga Ave., Coral Gables, archt. CD 11/5/43.

Ky., Hopkinsville—HOUSING—B.A. 10/31—Hopkinsville Municipal Housing Comn., 134 dwelling units, Proj. Ky 11-1. Plans deposit $50, Meriwether Marye & Assoc., 236 E. Short St., Lexington, archts. Bids 6/21 rejected. CD 5/31.

Ala., Oneonta—HOUSING—B.A. About 11/1—Oneonta Housing Auth., Oneonta, 50 housing units, $400,000. CD 3/24/50.

Ala., Roanoke — HOSPITAL — B.A. About 11/1 — Randolph County Hospital Assn., Roanoke, Ala., hospital, $440,000. CD 8/10/50.

Ga., Rossville—SCHOOL—B.A. About 11/1—City, 40,000 sq. ft. high school, $350,000. Selmon T. Franklin, 421 Poplar St., Chattanooga, Tenn., archt.

S. C., Summerton—HIGH SCHOOL—B.A. About 11/1—City, high school. Approx. $300,000. James & Durant, Sumter, archts.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

WEST VIRGINIA—State Hy. Comn., Charleston.

Standard Asphalt & Tar Co., 1640 4 Ave., Charleston, W. Va., CA, **$184,131**, b. conc. 5.72 mi. Henderson Couch Road, S 206(4) Maxon Co.;

Stickley Bros. Inc., Keyser, W. Va., CA, **$127,650** traffic bound 4.05 mi. Jesse Run Road Proj. 5643, Lewis Co.

Harman Bros., Grafton, W. Va., CA, **$208,139**, grading, draining, bridge 6.72 mi. William-Gormania Road, Proj. S606 (1) Grant and Tucker Counties. Bids Sept. 25, awarded Oct. 1. Grand total $519,920. CD 9/19.

C. L. L. Rhodes, Decatur, Ga., CA, **$158,348**, runway extension at Fulton County Airport, ATLANTA, GA. Fulton Co., Atlanta, Ga. Bids Oct. 3. CD 9/7.

S. J. Curry & Co., Albany, Ga., LB, **$152,745**, sanitary sewer imprvs., CAMILLA, GA. City, Camilla, Ga. Bids Oct. 2. CD 8/30.

E. N. Murray, Buena Vista, Ga., CA, **$55,903**, water works imprvs., WHITESBURG, GA. City, Whitesburg, Ga. Bids Sept. 29. CD 9/7.

Sanford Kay Constr. Co., 420 Lincoln Rd., Miami Beach, Fla., CA, **$52,000**, bulkhead, 17375 Collins Ave., MIAMI BEACH, FLA. Forel Realty Corp., c/o contractor.

Harbert Constr. Corp., P.O. Box 1369, Birmingham, Ala. CA **$187,468**. Proj. 5-W, water mains, JACKSON, MISS. City, Jackson, Miss. (Correction—contractor). CD 10/3, under CA.

KENTUCKY—State Hy. Dpt., Frankfort.

Codell Constr. Co., Winchester, Ky. LB **$77,920**, railroad, tunnel, culvert, bit. penetration approaches 0.047 mi. Three Point Rd., SP 48-588, Harlan Co. Bids Sept. 28. CD 9/12.

▲ **KENTUCKY**—State Hy. Dpt., Frankfort.

Herry J. Meyers Jr., Covington, Ky., LB **$118,914**, traffic bound limestone 3.11 mi. Manchester-Pineville Rd., S 325 (4), SP 7-24, 26-105, Bell and Clay Counties;

R. B. Tyler Co., 1446 Levering St., Louisville, Ky. LB **$357,888**. wid'n., 6 in. stabilization with b. conc., bit. surf. 23.263 mi. Hopkinsville-Dawson Springs Rd., S 304 (5), SP 24-285, 54-260, Christian and Hopkins Counties;

The Fuller-Davies Co., Covington, Ky. LB **$120,178**. traffic bound limestone 2.812 mi. Cynthiana Lexington Rd., F 541 (1), SP 49-112, 49-252, 9-259, Harrison and Bourbon Counties;

Licking River Limestone Co., West Liberty, Ky. LB **$75,273**, traffic bound limestone 2.147 mi. Vanceburg-Kinniconick-Mt. Carmel Rd., S 151 (2), SP 35-70, 68-74, Lewis and Fleming Counties;

G. & R. Coal Co., Robbins, Tenn., LB **$81,024**, reconstr., local bank or creek grav. 4.974 mi. Clementsville-Possum Trot Rd., RS 23-381, Casey Co.;

R. R. Dawson Bridge Co. and Spickard & McClure, Bloomfield, Ky., LB **$64,771**, reconstr., traffic bound limestone 2.942 mi. Meredith Creek Rd., RS 86-414, Monroe Co.;

Franklin Constr. Co., Frankfort, Ky. LB **$134,654.** bit. penetration macad. surf. 12.767 mi. Worthville-Ballsville Landing-Gratz Rd., SP 94-233, Owen Co.

Wells & White, Inc., Morehead, Ky. LB. **$90,320.** reconstr., traffic bound river grav. 5.988 mi. Schultz Creek Rd., RS 45-511, Greenup Co.;

Burchett Trucking Co., Prestonburg, Ky., LB **$69,389.** reconstr., traffic bound slag 2.939 mi. Ratcliff Creek Rd., RS 98-923, Pike Co.; LB **$70,392,** reconstr., traffic bound slag 2.84 mi., Raccoon Creek Rd., RS 98-503, 98-883, Pike Co.;

Winston Ford Co., Prestonburg, Ky. LB **$68,632.** reconstr., traffic bound slag 1.471 mi. Marrowbone-Hellier Rd., RS 98-243, Pike Co. Bids Sept. 28. CD 9/12.

TENNESSEE—State Hy. Dpt., Nashville.

A. B. Long Constr. Co., Harriman, Tenn., CA. **$824,490,** crushed stone surf., construct 2 bridges 9.138 mi. sect. of State Rte. 6 from 1 mi. north of Columbia to Spring Hill, Proj. No. FI-006-2-(6), Maury Co.;

J. B. Michael & Co., 1021 Heywood St., Memphis, Tenn., CA. **$741,529,** wid'n., resurf. concrete pavement with c. conc. and bit. materials, construct sidewalks, storm sewers, and wid'n. present bridge over Cypress Creek 0.535 mi. State Hy. 57 (Poplar Blvd.) in Memphis from Aulon Viaduct and extending to Deloach St. and from point near Cheerry Rd. to city limits, Proj. No. F-050-1-(1), Shelby Co. Bids Sept. 21. CD 9/26, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Seabright Constr. Co., 4201 Wood St., Wheeling, W. Va., CA, **$600,000,** 62,000 sq. ft. steel strapping PLANT, WEIRTON, W. VA. Signode Steel Strapping Co., 2600 N. Western Ave., Chicago, Zone 47, Ill. Awarded Sept. 28. CD 8/1.

George W. Kane, Durham, N. C., LB. **$895,227.** Junior-Senior HIGH SCHOOL, RALEIGH, N. C. City Admin. Unit Jesse Sanderson, supt., Raleigh, N. C. Bids Oct. 3. CD 9/28.

Ira H. Hardin Co., 1000 Peachtree N.E. Atlanta, Ga. CA, **$280,000,** WAREHOUSE, ATLANTA, GA. Gordy Tire Co., 119 Ponce de Leon Ave. N.E., Atlanta, Ga.

Knox Constr. Co., Thomason, Ga., CA, **$365,558,** HOUSING units, CAMILLA, GA. Camilla Housing Auth., Camilla, Ga. Bids Oct. 2. CD 9/18.

▲ **Ray M. Lee Co.,** 1004 Edgewood Ave. N.E., Atlanta, Ga., CA **$1,129,166,** HOSPITAL, FORT OGLETHORPE, GA. Tri-County Hospital Assn., Fort Oglethorpe, Ga. Bids Aug. 15. CD 8/20, under LB.

Burk Constr. Corp., Inc., 1017 Kane Concourse, Bay Harbor Island, Fla., CA, **$300,000,** HOTEL, MIAMI, FLA. Albert Pick Hotel, c/o contractor.

▲ **Sanford Kay Constr. Co.,** 420 Lincoln Rd., Miami Beach, Fla., CA, **$2,000,000,** HOTEL, MIAMI BEACH, FLA. Sam Kay & Sam Haas, 420 Lincoln Rd., Miami Beach, Fla.

▲ **Midwest Mortgage Co., Inc.,** (Sponsor), 2545 S. Third St., Louisville, Ky. CA construct, manage, finance 400 HOUSING units, 2nd Proj., FORT CAMPBELL, KY. Dpt. Army, Second Army, Fort Meade, Md.

Harmon Constr. Co., 100 S. Indiana St., Oklahoma City, Okla., CA. Approx. **$600,000.** LIBRARY, MEMPHIS, TENN. Southwestern University, c/o contractor. Bids Sept. 7. CD 8/24.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **O., Columbus**—BACHELOR OFFICERS QUARTERS—B.A. 10/24—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., 2 two story, 34x234 ft., frame bachelor officers quarters bldg., and roads, parking area, walks and utilities, at Lockbourne Air Force Base, approx. 10 mi. southeast of here, Serial No. Eng. 46-022-52-8. CD 8/27.

O., Middletown—B.A. 10/25—City, furnish, install approx. 11,800 lin. ft. 36- to 102-in. trunk sewers, incl. special structures, manholes, inlets, house service connections, etc. for Ninth Ave. Relief Sewerage System; furnish, install, approx. 2,630 lin. ft. 54- to 66-in. trunk sewers, with special structures, manholes, inlets, house service connections, etc. for Central Ave.-Second Ave. Relief Sewerage System. Plans deposit $10. Floyd G. Browne & Assoc., 123 W. Church St., Marion, consult. engrs. CD 6/14.

† **O., Columbus**—COMMUNICATIONS DUCT, OVERHEAD LINES—B.A. About 10/26—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., communications duct and overhead lines (Phase C), Lockbourne Air Force Base, Serial No. ENG 46-022-52-63. Plans deposit $10.

Ill., Springfield—B.A. 10/26—Hospital Sisters of 3rd Order of St. Francis, Box 42, Springfield, Ill. sanitary sewers imprvs. incl. Division A, sewers force mains and water mains; Div B, sewage treatment plant and sewage pumping station, for St. Johns Sanatorium and St. James Trade School. Plans deposit $15. Crawford, Murphy & Tilly, 400½ E. Adams St., consult. engrs.

Ind., Richmond—B.A. 10/27—Bd. Comrs., Wayne Co., R. A. Crye, auditor, Court House, 3 span 208 ft. continuous steel beam bridge rein.-con. abutments and piers, over West Fork Whitewater River Cambridge City, $150,000. Plans deposit $25. Pierce & Gruber, Hume-Mansur bldg., Indianapolis, consult. engrs. D. B. Davis, Court House, co. engr. CD 8/19/48.

BIDS ASKED—BUILDINGS

▲ **O., Youngstown** — HOSPITAL — Bids After 10/15 — Youngstown Hospital Assn., North Side Gypsy Lane and Goleta Sts., South Side Hospital addn. $2,500,000. Otto J. Kling, 661 Wick Ave., archt. CD 7/21/49.

Ind., New Albany—HOUSING—B.A. 10/23—New Albany Housing Comn., New Albany, 48 additional apartments to present low-cost housing. Plans deposit $25. Hawkins & Walker, New Albany, archts.

Mich., Royal Oak—SCHOOL—B.A. 10/24—City, Bd. Educ., O. H. Wyman, secy, 2 story, bsmnt., brick steel Fred E. Upton School, Samoset Rd. Bids 7/10 re ected. Frederick D. Madison, 230 Main St., archt. CD 6/8.

† **Ind., Jeffersonville**—SHOP—B.A. 10/25—U. S. Eng., 830 West Broadway, Louisville, 3, Ky., box and crate shop at Jeffersonville Quartermaster Depot, Serial No. ENG 15-029-52-10. CD 6/28.

O., Orient—BUILDING—B.A. 10/26—Dpt. P. Wks., S. O. Linzell, dir., Ohio Dpts. Bldg., Columbus, "B" type building at Orient State Institute. Plans deposit $5. H. G. Allen, c/o owner, cons. archt.

† **O., Lacarne**—WAREHOUSE—B.A. About 10/31—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., general supply warehouse, on Lake Erie, Erie Ordnance Depot, Serial No. Eng. 46-022-52-64, approx. 35 mi. east of Toledo. CD 7/18.

† **O., Marion**—WAREHOUSE—B.A. About 11/15—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., one general purpose warehouse, Marion Engineer Depot, Serial No. ENG 46-022-52-66.

Ind., Hammond—PLANT—Bids Asked—American Steel foundries Ind., 400 N. Michigan Ave., Chicago, 11, Ill., plant works addn., 4831 Hohman Ave. $100,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Great Lakes Dredge & Dock Co.,** Wimson Bldg., Cleveland, O., CA. **$139,400.** Advanced maintenance dredging in Cuyahoga River, part of Cleveland Harbor, OHIO. U. S. Eng., Engineer Park, Buffalo 7, N. Y. Bids Oct. 3, awarded Oct. 4. CD 10/2.

W. L. Harper Co., 2910 E. Highland St., Cincinnati, O. LB. **$954,107,** est. $1,215,226, sanitary sewer;

Charles F. McCurdy Constr. Co., 906 Main St., Cincinnati, O., LB. **$471,117,** est. $576,186, water line, both in Beavercreek Sanitary Dist., DAYTON, O. Comrs., Montgomery Co. Court House, Dayton, O. Bids Oct. 4. CD 9/27.

Smith & Johnson, 1799 Kentucky Ave., Indianapolis, Ind., CA. **$698,000,** dam and spillway, Contr. 4A;

Jose Owens, Shelbyville, Ind., CA, **$69,000,** site imprvs., Contr. 4C, water works imprv. project, BLOOMINGTON, IND. Bd. P. Wks., City Hall, Bloomington, Ind. Bids Aug. 10. CD 9/18, under LB.

† **Geo. M. Eady Co.,** 340 Byrne St., Louisville, Ky., CA, Approx. **$90,000,** reworking entire railroad trackage, Jefferson Q.M. Depot, JEFFERSONVILLE, IND. Dpt. Army, Pentagon Bldg., Wash., D. C. Awarded Aug. 1. CD 6/20, under Public Buildings.

Coolidge Constr. Co., Inkster, Mich. CA **$150,000.** 4,000 ft. 36 in. sewer main, INKSTER, MICH. Village Inkster, Mich. Mason L. Brown & Son, 120 Madison St., Detroit, Mich., engrs.

BUILDINGS

LOW BIDS AND CONTRACTS

Henry J. Spieker Co., 1418 Elm St., Toledo, O., LB. **$595,000.** general constr. Jewish COMMUNITY CENTER bldg., Collingwood Blvd., TOLEDO, O. Jewish Community Center, Albert Brown, dir., 1900 Linwood Ave., Toledo, O. Bids Sept. 11. CD 4/26.

George W. Lathrop & Son, 1510 Montcalm St., Toledo, O., LB. **$439,962,** general constr. 1 story brick SCHOOL near W. Central Ave. and Middlesex Dr., TOLEDO, O. Bd. Educ., Southard Ave., Toledo, O. Bids Oct. 1. CD 9/11.

Nellis Constr. Co., East Liverpool, O., CA. **$506,935.** elementary SCHOOL to replace Central School, KENT, O. Bd. Educ., Kent, O. Bids Sept. 24, awarded Oct. 2. CD 7/18/50.

Scholz Constr. Co., 3662 Kenwood St., Toledo, O., CA, Approx. **$150,000.** 1 story, 100x160 ft., brick, glass block FACTORY for mfg. metal stampings, 6120 Detroit Ave., TOLEDO, O. Joseph Shaw Co., Benore Rd., Toledo, O.

Comte Constr. Co., 912 Summit St., Toledo, O., CA. Approx. **$150,000.** 1 story 64x100 ft., concrete block, steel FACTORY, for metal plating, South Ave. near Wayne St., TOLEDO, O. DiSalle Plating Co., 1801 Clinton St., Toledo, O.

▲ **A. Bentley & Sons Co.,** 201 Belmont St., Toledo, O., LB, **$5,500,000,** design and construct, 1 and 2 story, 400,000 sq. ft., structural steel, masonry FACTORY FORT WAYNE, IND. Dana Corp., Salisbury Axles Div., Benett Rd., Toledo O. Certificate Necessity Granted. CD 9/21.

▲ **I. E. Millstone Constr. Co.,** 4343 Clayton Ave., St. Louis 10, Mo., LB, **$5,970,000** general contract;

Edward J. Maag Plbg. & Htg. Co., 321 N. 5th St., East St. Louis, Ill., LB, **$852,989,** plumbing on Ill. 13; **$548,420** plumbing on Ill. 1-4 and **$185,872** plumbing on Ill. 1-5;

Friedman Electric Co., 105 N. Illinois Ave., Belleville, Ill., LB, **$437,000,** electric and overheat electrical distr. sys. combined on Ill 1-3-Ill. 1-4 and Ill. 1-5 for HOUSING, John De Shields Homes incl. 300 units Proj. 11-1-3 Roosevelt Homes 300 units Proj. Ill. 1-4; and Villa Griffin Homes, 100 units, Proj. Ill. 1-5, EAST ST. LOUIS, ILL. St. Clair County Housing Auth., J. E. Hays, exec. dir., 6 St. and Olive Ave., East St. Louis, Ill. Bids Sept. 25. CD 8/30.

▲ **George A. Fuller Co.,** 111 W. Washington St., Chicago 2, Ill., CA, **$5,000,000,** PHARMACEUTICAL PLANT and LABORATORY, KANKAKEE, ILL. Armour & Co., Union Stock Yards, Chicago 9, Ill. Holabird & Root, 180 N. Wabash St., Chicago 1, Ill. Awarded Oct. 1. CD 8/14, under Ill., Bradley.

Service Products, Inc., N. Westwood Ave., Toledo, O. CA **$450,000.** install heat insulation for all piping equip., and 2 Babcock boilers at Whiting Electric Generating PLANT, ERIE, MICH. Consumers Power Co., Jackson, Mich.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† **Colorado**—VALVE, etc.—B.A. 10/23—Bureau Reclamation Dpt. Interior, Bldg. 52, Denver Federal Center, Denver, furnishing, del. f.o.b. cars shipping point or f.o.b. cars Walt Siding and Loveland, Colo., tube valve with control stand, one lot of connecting piping for pump-turbine bypass Flatiron Power and Pumping Plant, Colorado-Big Thompson Proj., Spec. DS-3552. L. N. McClellan, ch. engr.

Mo., Kansas City—B.A. 10/23—City, Pub. Wks., City Hall, Sect. 1, sanitary sewer 8- to 42-in. diam. pipe from vicinity of Gardner to Monroe to discharge into Blue River, approx. 2½ mi. and construct 14 in. c.i. force main along Garner, approx. 3,100 ft. long, Sect. II, construct sewage pumping station on Garnder and stations near point of discharge into Blue River. CD 11/10/47.

† **South Dakota**—TRANSMISSION LINES—B.A. 10/24—Bureau Reclamation, Dpt. Interior, Huron, Fort Randall-Sioux City 230 kilovolt transmission line, Transmission Div., Missouri River Basin Proj., Spec. DC 3546. Extended date. CD 9/18.

† **N. M., Las Cruces**—B.A. 10/25—U. S. Eng., P.O. Box 1538, Albuquerque, erosion control, family housing area, White Sands Proving Grounds, Serial No. 29-005-52-15. Approx. $90,000. Plans deposit $75. CD 9/24.

Texas—RURAL DISTRIBUTION LINES—B.A.—10/25 Bowie-Cass Electric Co-operative, Inc., c/o D. N. Pinkham, press., Douglassville, con. 81 mi. new membership extens. and tie lines and 101 mi. conversion, in Bowie, Cass, Titus, Morris and Red River Counties. $165,000. Plans deposit $10. Freese & Nichols, 407 Danciger Bldg., Fort Worth, engrs. CD 3/1/48.

† **Wyoming—Montana** — TRANSMISSION LINES — B.A. 10/25—Bureau Reclamation, Dpt. Interior, Cody, Wyo., constr. Lovell-Yellowtail 115-kilovolt transmission line, Missouri River Basin Proj., between Lovell, Wyo., and Yellowtail Dam, approx. 30 mi. south of Hardin, Mont., Spec. DC-3555.

† **Tex., Lackland Air Base** (Br. San Antonio)—ELECTRICAL POWER FACILITIES—B.A. 10/26—U. S. Eng., 606 Santa Fe Bldg., Galveston, addnl. electrical power facilities. Inv. No. ENG. 41-243-52-2. CD 3/23.

† **Colorado**—B.A. 10/30—Bureau Reclamation, Dpt. Interior, Loveland, constr. Carter Lake pressure conduit, Estes Park-Foothills Power Aqueduct, Colorado Big Thompson, Proj., Spec. DC-3547.

† **Colorado**—CONTROL BOARD, etc.—B.A. 10/30—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Loveland, Colo., and Walt Siding, Colo. one main control board and one recording board for Flatiron Power and Pumping Plant, Colorado—Big Thompson Proj., Spec. DS-3549. L. N. McClellan, ch. engr.

▲ **Tex., Waco**—COLISEUM, etc.—B.A. 11/5—McLennan Co., Court House, Program 1, 240x265 ft. masonry coliseum, est. $450,000; Program 2, 64x168 ft. 4-H club bldg., 80x120 ft., main agriculture bldg. and auditorium, est. $475,000; Program 3, four 64x168 ft., agricultural exhibit bldgs., site pavement, entrances; parking areas, water, sewer lines, $575,000. Broad & Nelson, 505 N. Ervay St., Dallas, and Harris H. Roberts, 1103 Medical Arts Bldg., Waco, archts., Zeigler, Housman & Assoc., 1900 N. St. Paul St., Dallas, engrs. CD 10/8, under LB.

BIDS ASKED—BUILDINGS

▲ **Tex., Dallas**—HOSPITAL—B.A. 10/25—Methodist Hospital, Colorado and Ballard Sts., hospital imprvs. and construct new 6 story masonry hospital unit, air-conditioning, $1,000,000. Plans deposit $25. George L. Dahl, 2101 N. St. Paul St., engr. and archt. CD 10/20/50.

N. M., Albuquerque—GEOLOGY—B.A. 10/26—Regents of University of New Mexico, University Hill, precast hollow concrete blocks, built-up roofing with rigid roof insulation, geology bldg. $725,000. Plans deposit $35, Meem, Zehner, Holien & Assoc., Box 628, Santa Fe, archts. CD 7/18.

Colo., Greeley—SCHOOL—B.A. 10/29—Bd. Educ., at Junior High School Bldg., 8 A.v., 1 story, 20,400 sq. ft. brick Maplewood Grade School adn. $980,000. Atchison & Kloverstrom, 1254 Monaco Parkway, Denver, Colo., engrs. and archts. CD 5/29.

▲ **Tex., Austin**—LAW SCHOOL—B.A. 12/5—University of Texas, c/o Dudley K. Woodward, chn. Bd. Regents, Austin, 3 story rein.-con. steel law school bldg. $1,200,000. Mark Lemon, 1210½ Main St., Dallas, archt., Zumwalt & Vinther, Mercantile Securities Bldg., Dallas, mech. engrs. CD 3/4/49.

Tex., Houston—WAREHOUSE—Bids Asked—Owner c/o Woestemeyer & Gaffney, archts., 2419 Travis St., warehouse. $90,000.

Tex., San Antonio—SHOWROOM and WAREHOUSE—Bids Asked—Summers Electric Co., 2001 Griffin St., Dallas, 2 story showroom and warehouse. Sam B. Lewis, Jr., 9043 Redondo Dr., Dallas, archts. Bids Sept. 17 rejected. CD 9/12.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

IOWA—State Hy. Comn., Ames,
Kehe Constr. Co., Waverly, Ia., LB **$79,654**, bridges, culverts F-975 (3), Bremer Co.;
Schmidt Constr. Co., Winfield, Ia., LB, **$106,867**, bridges, culverts FN-234, Cedar and Jones Counties;
C. B. & M. R. Taylor, Decorah, Ia., LB, **$77,469**, bridges, culverts S-2060 (2), Howard Co.;
A. Olson Constr. Co., Waterlo, Ia., LB, **$355,461** FN-737, Van Buren Co. Bids Oct. 2. CD 9/20.

IOWA—State Hy. Comn., Ames,
E. M. Duesenberg, Inc., Clear Lake, Ia., LB, **$97,735** paving 0.462 mi. F-5(3), Buchanan Co.;
Jay W. Craig Co., 1814 N.E. California St., Minneapolis, Minn., LB, **$336,124** b. conc. resurfacing 22.721 mi. FN-145, Guthrie Co.;
Midwest Pre-Cote Co., Randolph St., Kansas City, Mo., LB, **$348,081**, b. conc. resurf. 22.696 mi. P-149 Lee Co.;
Fielding & Shepley, Inc., 1258 Bohn Ave., St. Paul, Minn., LB, **$295,271**, b. conc. resurf. 20.119 mi. P-1028, Marshall and Story Counties. Bids Oct. 2. CD 9/20.

MISSOURI—State Hy. Comn., Jefferson City,
O'Dell & Riney Constr. Co., Box 3775, Kirkwood, Mo. LB **$72,630**, graded earth, wid'n, present roadway 3.848 mi. Scott Co.; LB **$62,196**, graded earth, wid'n, present roadway, 4.165 mi. Scott Co. Bids Sept. 28. CD 9/12.

† **U. S. Eng.**, Davidson Bldg., Kansas City 8, Mo. rejected bids Oct. 1, emergency repair 33 mi. levees Missouri River Pinckney to St. Albans bends, MISSOURI. LB **$434,624**. Est. $330,952. Will re-advertise. CD 9/21.

Southern Line Constr. Co., Falls Bldg., Memphis, Tenn., LB, **$392,411**, constr. 288.8 mi. new rural distr. lines in Barry and Stone Counties in Mo and Boone, Carroll, Madison, Newton and Searcy Counties, Ark., ARKANSAS and MISSOURI. Carroll Electric Co-operative, Afton Wheeler, pres., Berryville, Ark. Bids Sept. 19. CD 9/6.

OKLAHOMA—Oklahoma Turnpike Auth., 100 N.E. 23 St., Oklahoma City, Okla.,
E. E. Barber, 722 Wheeler St., Fort Smith, Ark., CA. **$195,360**, est. $187,200, concrete bridge on Turnpike at Luther, Oklahoma Co. Bids Sept. 25, awarded Sept. 26. CD 9/10.

OKLAHOMA—State Hy. Dpt., Capitol, Oklahoma City 5. Okla.,
H. D. Youngman, Baxter Springs, Kan., LB, **$376,801**, est. $377,296, grade and pavement 7.903 mi. U. S. 69, Atoka Co.;
Layman & Sons, Riverside Dr., Tulsa, Okla., LB **$138,-310**, est. $138,770, grade and pavement 3 mi. U. S. 69, Atoka Co.; LB. **$115,888**, est. $100,000, stabil. aggregate base and b. conc. 1.558 mi. U. S. 69, south of Kiowa Pittsburg Co. Bids Oct. 2. CD 9/25.

OKLAHOMA—State Hy. Dpt., Capitol, Oklahoma City, Zone 5,
W. D. Fulton Co., 1916 N. Broadway, Oklahoma City 3, Okla., CA. **$81,373**, est. $97,435, grading, drainage 3.819 mi. State Hy. 5, south of Tipton, Tillman Co.;
W. E. Logan & Sons, Barnes Bldg., Muskogee, Okla., CA. **$202,833**, est. $160,000, grading, drainage 6 mi. U. S. 59, south of Spavinaw Creek, Delaware Co.; CA. **$123,662**, est. $173,685, grading, drainage 6.369 mi. U. S. 59, south of Jay, Delaware Co.;
Brooks & Dahlgren, Insurance Bldg., Oklahoma City 2, Okla. CA. **$275,100**, est. $260,400, b. conc. wid'n. and resurf. 7.203 mi. U. S. 81, north of Comanche, Stevens Co. Grand total $682,968. Bids Oct. 2. CD 9/25.

Montgomery Co., Conroe, Tex., Own Forces. **$100,000**. addni. road imprvs., incl. surf., CONROE, TEX. Claude H. Lindsley, 2314 McGregory Way, Houston, Tex., engr.

City, Midland, Tex., rejected bids Sept. 11, trunk sewer mains, MIDLAND, TEX. Est. **$360,000**. CD 8/28.

J. L. Foutz & Bursum, 706 N. Dustin St., Farmington, N. M., CA. **$309,071**, est. $310,000, natural gas supply sys., GALLUP, N. M. Town, Gallup, N. M. Hatfield Engrs., Korber Bldg., Albuquerque, N. M., engrs. Awarded Oct. 2. CD 9/12.

BUILDINGS

LOW BIDS AND CONTRACTS

Higgenbotham Bros., 6053 Childress Ave., St. Louis, Mo. Own Forces. Approx. **$300,000**. 10 seven-room, brick, concrete, RESIDENCES, GARAGES, in Frontenac, ST. LOUIS, MO. W. H. Mills & Son, 8032 Forsyth St., St. Louis 24, Mo., archts. Ed. J. Lawler, 7637 Dale Ave., St. Louis 17, Mo., assoc. archt.

Hillcrest Park, Inc., 7412 Morganford Rd., St. Louis 16, Mo. Own Forces. Approx. **$300,000**. 24-brick, concrete DWELLINGS, Deanthar, Jeanene, Louis, Koeln and Christian Sts., ST. LOUIS, MO.

Rose Constr. Co., Box 814, Abilene, Tex., CA. Approx. **$600,000**, 2 story CHURCH SANCTUARY, ABILENE, TEX. First Baptist Church Congregation, Abilene, Tex. CD 1/26.

Harry Twombly, Freeport, Tex. Own Forces. Approx. **$400,000**. 50 HOUSING rental units, FREEPORT, TEX. CD 9/19.

LeBlanc, Inc., Box 351, Houston, Tex., LB. **$625,740**, est. $550,000, masonry constr. 8-room SCHOOL and allied rooms, 12-classroom SCHOOL and allied rooms, 9½-CLASSROOM addn. to Highland Elementary School LAMARQUE, TEX. Lamarque Independent School Dist., Lamarque, Tex. Bids Sept. 17. CD 9/19.

▲ **H. E. White**, Tyler, Tex., CA. Approx. **$1,275,000**, 15 story 150-room HOTEL, TYLER, TEX. Carlton Hotel, c/o Wm. Daniel, chn. Bldg. Comn., Tyler, Tex. CD 9/20.

George O. Teats & Sons, 414 W. Pikes Peak Ave., Colorado Springs, Colo., CA. **$650,000** general contract constr. Buena Ventura and Mazaland Grade SCHOOLS south of Patty Jewett Golf Course and Knob Hill, COLORADO SPRINGS, COLO. School District 11, Colorado Springs, Colo. Bids Sept. 19, awarded Sept. 20. CD 8/29.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **California**—B.A. 10/30—U. S. Eng., Wright Bldg. Sacramento, clearing reservoir, area, Pine Flat Project near Piedra on Kings River, Spec. 1569. CD 4/21/44.

Calif., Sacramento—B.A. 10/31—Sacramento Co., Court House, wid'n. 2 concrete bridges on Franklin Blvd. CD 3/9/45.

† **California**—GOVERNORS—B.A. 11/6—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., furnishing del. f.o.b. cars shipping point on Roseville, governors with pumping equipment turbines, for Folsom Power Plant, Central Valley Proj. Spec. DS-3568. L. N. McClellan, ch. engr.

BIDS ASKED—BUILDINGS

Wash., Cathlamet—SCHOOL—B.A. 10/25—School Dist. 150, Cathlamet, 1 story, 22,000 sq. ft., frame school, $300,000. Plans deposit $25. W. H. Rothe, 801 W. Yakima Ave., Yakima, Wash., archt. CD 11/3/50.

Nev., Hawthorne—SCHOOL—B.A. 10/30—Hawthorne Elementary School Dist. 7, Box LL-6, Hawthorne, Hawthorne School. Plans deposit $25. Russell Mills, Bradley Bldg., Reno, archt.

▲ **Calif., Paso Robles**—SCHOOL—B.A. 11/6—State Div. Architecture, P Kks. Bldg., Sacramento, Paso Robles School for Boys, $1,890,000. Plans deposit $50. CD 9/12/49.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

C. C. Beiswanger, 14535 Bothell Way, Seattle, Wash., LB, **$300,463**, 10 ponds and main bldg. for fish hatchery, HOODSPORT, WASH. State Dpt. Fisheries, Smith Tower, Seattle 4, Wash.

Osberg Constr. Co., 1132 N. 128 St., Seattle, Wash., CA, **$601,225**, clearing Ross Reservoir, SEATTLE, WASH. City, County-City Bldg., Seattle, Zone 4, Wash. Awarded Oct. 3. CD 10/3, under LB.

† **George R. Stacy**, P.O. Box 457, Tule Lake, Calif., LB. **$131,238**, pumping plants (irrigation) Klamath Proj. near Tule Lake, Spec. 2000C-172, OREGON. Bureau Reclamation, Dpt. Interior, Klamath Falls, Ore. Bids Sept. 27. CD 9/18.

CALIFORNIA—State Div. Hys., 120 S. Spring St., Los Angeles.

Oswald Bros. Co., 366 E. 58 St., Los Angeles, Calif., LB, **$526,731**, grading, surf. 2.5 mi. Hawythorne Ave. between 174 St. and 137 St., Los Angeles Co. Bids Sept. 27. CD 9/10.

CALIFORNIA—State Div. Hys., P. Wks. Bldg., Sacramento.

Lee J. Immel, P. O. Box 175, San Pablo, Calif., LB **$187,351**, grading, surfacing portions 1.9 mi. highway south city limits of Oakland, and Alvardo St., Alameda Co.

United Concrete Pipe Corp., Box 425, Baldwin Park, Calif., LB, **$646,206**, roadway 3.3 mi. on West Sacramento Freeway between Yolo Causeway and 0.8 mi. west of Tower Bridge, Yolo Co. Bids Oct. 3. CD 9/11.

De Luca & Son, Inc., 1745 Filbert St., San Francisco Calif., LB, **$187,400**, sewage treatment plant, MARTINEZ, CALIF. Mountain View Sanitary Dist., 1220 Palm Ave., Martinez, Calif. Bids Sept. 26. CD 9/18.

Erickson, Phillips & Weisberg, 3341 Telegraph Ave., Oakland, Calif., LB **$266,571**, complete Unit B of sewage treatment plant, SD 82, OAKLAND, CALIF. East Bay Municipal Utility Dist., 512 16 St., Oakland, Calif. Bids Sept. 28. CD 9/20.

† **Duncanson-Harrelson Co.**, 530 W. Cutting St., Richmond, Calif., LB, **$94,542**, installing pipe on hangers beneath bridge from Alameda to Bay Farm Island, LS 556, OAKLAND, CALIF. East Bay Municipal Utility Dist., 512 16 St., Oakland, Calif. Bids Sept. 29.

▲† **Ford J. Twaits Co.**, 449 S. Beaudry St., Los Angeles, **Morrison-Knudsen Co.**, 411 W. 5 St., Los Angeles and **Macco Corp.**, 14009 Paramount Blvd., Paramount, Calif., CA, **$3,661,000**, launching facilities and misc. bldgs., Spec. 31554, POINT MUGU, CALIF. U. S. Naval Air Missile Test Center, Point Mugu, Calif. Bids Sept. 19. CD 9/15, under LB.

Lentz Constr. Co., 2416 Sutterville Rd., Sacramento, Calif., LB, **$61,455**, 36 in. pipe line from filter plant to 14 and H Sts., SACRAMENTO, CALIF. City, City Hall, Sacramento, Calif. Bids Sept. 27. CD 9/19.

Dan Caputo, 2711 Moorpark Ave., San Jose, Calif., CA **$42,141**, small concrete dam 4 mi. south of Los Gatos Creek, SAN JOSE, CALIF. Santa Clara Water Conservation Dist., 60 N. 2 St., San Jose, Calif. Awarded Sept. 27. CD 6/27/49.

BUILDINGS

LOW BIDS AND CONTRACTS

W. B. Edmiston & Sons, Yakima, Wash., LB **$871,000**, general construct 1 story rein.-con., steel high SCHOOL, EPHRATA, WASH. School Dist. 165, Ephrata, Wash. Bids Oct. 1. CD 9/12.

Monson Bros., 475 6 St., San Francisco, Calif., LB **$951,846**, general contract, Sunnydale Elementary SCHOOL, SAN FRANCISCO, CALIF. Dpt. P. Wks., City Hall, San Francisco, Calif. Bids Oct. 3. CD 9/12.

Crown Constr. Co., 1231 S. La Brea Ave., Los Angeles, Calif., CA, **$456,930**, Roses Road SCHOOL, SAN GABRIEL, CALIF. San Gabriel School Dist., 301 S. San Gabriel St., San Gabriel, Calif. Bids Sept. 25. CD 10/2, under LB.

▲ **Parker, Steffens & Pearce**, 135 S. Park St., San Francisco, Calif., CA, **$2,645,241**, HOSPITAL bounded by Wildcat Creek and Richmond city limits, SAN PABLO, CALIF. West Contra Costa Hospital Dist. P.O. Box 1547, Richmond, Calif. Bids Sept. 6, awarded Oct. 1. CD 9/17, under LB.

CANADA

BIDS ASKED—BUILDINGS

▲ **Alta., Edmonton**—B.A. 10/29—City Comrs., Civic Block, Edmonton, Alta., 100-bed maternity hospital exten. plus modernization, and 4 story hospital addn., for Royal Alexandra Hospital, Edmonton, Alta., $2,-235,000. Plans deposit $50. Rule, Wynn & Rule, 11422 Jasper Ave., archts. CD 11/10/50.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Foundation Maritimes Ltd.**, 135 Lower St., Halifax, N. S. CA, Approx. **$1,879,000**, marine work incl. constr. deepwater jetty and storage area landward deck and finishing View St. and its adjunct at Seward Defences, HALIFAX, N. S. Defence Constr. Ltd., 1032 Gottingen St., Halifax, N. S. P. J. Mangan, c/o owner, engr. Bids Sept. 4. CD 8/20.

BUILDINGS

LOW BIDS AND CONTRACTS

Southern Alberta Constr. Ltd., 1601 Third Ave. S., Lethbridge Alta., CA, **$300,000**, 5 story, Nurses TRAINING SCHOOL, LETHBRIDGE, ALTA. Sisters of St. Martha, St. Michael's Hospital, 13 St. and 9 Ave., Lethbridge, Alta. CD 7/18.

▲ **Kenney Constr. Co. Ltd.**, P. O. Box 380, Yarmouth, N. S. CA, Approx. **$1,125,000**, HOSPITAL addn., HALIFAX, N. S. Children's Hospital Comm., Morris St., Halifax N. S. Bids July 24. CD 9/11, under LB.

▲ **Foundation Co. of Canada Ltd.**, 1220 Bay St., Toronto, Ont., CA **$3,000,000**, Total est. $12,000,000, 320,000 sq. ft., steel, concrete transformer FACTORY, TORONTO, ONT. Canadian General Electric Co. Ltd., 212 King St. W., Toronto, Ont. Awarded Oct. 2. CD 10/5.

T. J. Colbourne Constr. Ltd., 388 Weston Rd., Toronto, Ont. LB **$730,000**, est. $650,000, 128 suites in 16 bldgs. 2 story, brick, cinderblock low-cost rental APARTMENTS, TORONTO, ONT. York Twp., 2700 Eglinton Ave. W., Toronto, Ont. Bids Sept. 17. CD 8/30.

A. Bianchi & Son, 430 St. Roch St., Montreal, Que., CA, Approx. **$300,000** CHURCH and PRESBYTERY, Papineau Ave., MONTREAL, QUE. Parish of Notre Dame de DeFence, 6800 Henri Julien Ave., Montreal, Que. P. Colangelo, 3710 Cote St. Catherine Rd., Montreal, Que., archts. Bids Aug. 1. CD 7/23.

A. Pratte, Inc., R. R. 2, Victoriaville, Que., CA, **$82,-000**, GARAGE, THETFORD MINES, QUE. Shawinigan Water & Power Co. Ltd., 600 W. Dorchester St., Montreal, Que. T. W. Burge, 4059 Beaconsfield Ave., Montreal, Que., archt.

MacWilliams Constr. Co., Swift Current, Sask., CA **$240,-000**, BOILER HOUSE and MAINTENANCE BLDG. at School for Mental Defectives, MOOSE JAW, SASK. Province of Saskatchewan, Regina, Sask.

PROPOSED PROJECTS

WATER SUPPLY

Calif., Fresno—Bd. Directors farmers Water Dist. 2146 Merced St., water pumping and distr. sys., under Proj. 51-1 and 1913 act. **$202,000**. Howard S. Stoddard, Bank of America Bldg., Los Banos, consult. engr.

Ga., Jesup—City, WW imprvs. **$400,000**. Vinson & Co., 80 Linden Ave. N.E., Atlanta., consult. engrs.

Kan., Pittsburg—City, Agnes M. Young, clk., defeated **$905,000** bonds, remodeling water pumping station, water storage tanks, etc. CD 7/31.

La., Baldwin—Town. **$143,000** bond election Oct. 24, WW imprvs.

Mass., Blackstone—Town, Water Comn., Town Hall, Contrs. 3 and 4, water sys., laying water mains, wells and pumps, **$400,000**, Howard E. Bailey, 6 Beacon St., Boston, consult. engr.

▲ **N.J., Trenton**—City, City Hall, water treatment plant, Approx. **$3,000,000**. Bowe, Albertson & Assocs., 110 William St., New York 38, N. Y., engrs. CD 6/11/51.

▲ **Tex., Corsicana**—City, water supply, earthen and concrete dam on Big Onion Creek, **$3,200,000**; water pumping plant on Big Onion Creek, **$1,250,000**; auxiliary emergency water supply main from Richland Creek to city limits, **$550,000**. CD 10/30/50.

SEWERS, WASTE DISPOSAL

▲ **Conn., Stratford**—Town, Master storm water drainage project, **$1,500,000**; exten. sanitary sewerage sys., Approx. **$1,000,000**. Bowe, Albertson & Assocs., 110 William St. New York 38, N. Y., engrs.

(Continued on page 94)

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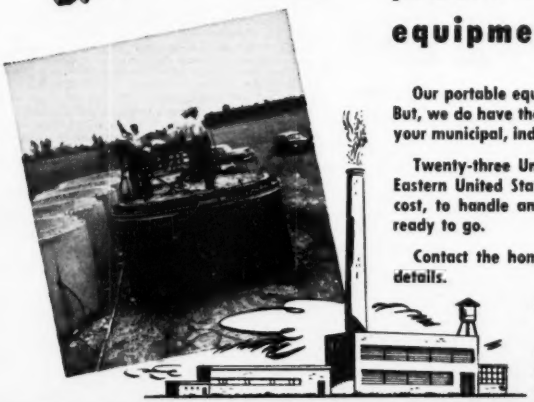

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(Continued from page 92)

Ga., Jesup—City, sanitary sewers imprvs. $400,000. Vinson & Co., 80 Linden Ave. N.E., Atlanta, consult. engrs.

▲ Ill., Danville—City, City Hall, storm sewerage sys., ditch widening, sanitary sewer modification and extension $3,000,000. Warren & Van Praag, 253 S. Park St., Decatur, Ill., consult. engrs. CD 1/4/46.

Ill., Lake Zurich—Village, sewage treatment works and sewer lines, $250,000. Victor Kasser, 202 E. Chicago Ave., Elgin, consult. engr. CD 4/9/46.

La., Gretna—Jefferson Parish Sewerage Dist. 2, c/o Edward Ernst, Gretna, $700,000 bond election Nov. 13, sanitary sewer imprvs. CD 6/6/49.

Mich., St. Joseph—Cty, Pub. Wks. Dpt., sewerage, plan interceptor sewers, force mains, sewage lift stations to connect with Twin City Disposal Plant, $250,000. Consoer, Townsend & Assoc., 351 E. Ohio St., Chicago, Ill., consult. engrs.

Mich., Shelby—Village, sewage disposal plant, treatment facilities, $300,000.

Utah, American Fork—City, c/o Willard Cleghorn, mayor, voted $525,000 bonds Sept. 21, sanitary sewerage sys. and disposal plant. Caldwell, Richards & Sorensen, Templeton Bldg., Salt Lake City, consult. engrs. CD 12/15/48.

BRIDGES

▲ La., Covington—St. Tammany and Jefferson Parishes Police Jury, voted $40,000,000 bonds causeway across Lake Pontchartrain. CD 8/30.

† Montana—Bureau Reclamation, Dpt. Interior, Region 1, Columbia Falls, constr. West Side Forest Service Road bridges at Graves, Wheeler and Sullivan Creeks, west side tributaries of South Fork of Flathead River, from 30 to 40 mi. southeast of Columbia Falls, Hungry Horse Reservoir, Hungry Horse Proj.

Tex., San Antonio—Bexar Co., Comrs Court, Court House, general bridge constr., Precincts 1, 2, 3, and 4. $600,000.

STREETS AND ROADS

N. Y., Berne—Town, 27.8 mi. roads, $197,875.
N. Y., Bethlehem—Town, 23.41 mi. roads, $210,690.
N. Y., Chester—Town, 21.05 mi. roads, $147,350.
N. Y., Colonie—Town, 19.82 mi. roads, $190,300.
N. Y., Guilderland—Town, 21.4 mi. roads, $159,916.
N. Y., Horicon—Town, 19.999 mi. roads, $140,000.
N. Y., Paris—Town, 17.48 mi. roads, $122,360.
N. Y., Remsen—Town, 18.39 mi. roads, $128,730.
N. Y., Rensselaerville—Town, 15.6 mi. roads, $105,300.
N. Y., Rome—Town, 20.25 mi. roads, $141,750.
N. Y., Sangerfield—Town, 20.53 mi. roads, $143,710.
N. Y., Steuben—Town, 17.74 mi. roads, $124,180.
N. Y., Trenton—Town, 16.65 mi. roads, $116,550.
N. Y., Verona—Town, 31.2 mi. roads, $218,400; 13.42 mi. roads, $93,940.
N. Y., Vienna—Town, 47.22 mi. roads, $330,540.
N. Y., Western—Town, 20 mi. roads, $140,000.
N. Y., Westmoreland—Town, 28.08 mi. roads, $196,560.

Tex., Athens—Henderson Co., Court House, construct approx. 12 mi. new roads, Athens area, $106,000; repairing, reconditioning, drainage, surf., approx. 35 mi. roads in Malakoff area and other needed sects. of county. $250,000. CD 4/28/47.

Tex., Columbus—Colorado Co., Columbus, 3½ mi. farm-to-market roads, Precinct 2, $70,000; 4½ mi. farm-to-market roads, Precinct 3, $85,000. 7/22/47.

Tex., El Paso—El Paso Co., El Paso, general road reconstruction and imprvs. throughout county where needed. $175,000.

Tex., Gruver—Hansford Co., Court House, Spearman, 7 mi. new road constr. and 10 mi. imprv. some existing roads. $130,000.

Tex., Houston—MacGregor Investment Co., c/o Earl Gregg, 2620 Bissonet St., street constr. and permanent type paving, on 175 acre tract for 812 lots, south of Belfort Ave. and north of Vassar Rd. to be called Belfort Park. $200,000.

Tex., Houston—Reed Road Properties, Inc., 4019 River Dr., street constr. and permanent type paving, 144-acre tract of 576 homesites, west of Mykawa Rd. and east of Chocolate Bayou. $125,000. R. C. Shaner, c/o owner, consult. engr.

Tex., Kaufman—Kaufman Co., Kaufman, repairing, imprv., surfacing, drainage, approx. 2 mi. in vicinity of here. $160,000. CD 11/16/49.

Tex., Kerrville—Kerr Co., Court House, bond election Nov. 13, construct farm-to-market roads, south sect. of county, $100,000; north sect. of county $90,000; east sect. of county, $125,000; west sect. of county, $105,000. CD 9/26.

Tex., Kountze—Hardin Co., Court House, general road imprvs. and resurf. in 60 mi. areas throughout county, $200,000.

Tex., Odessa—City, voted bonds, street constr. and paving. $200,000.

Tex., Odessa—Ector Co., Court House, approx. 12 mi. new roads, repairing, reconditioning some existing roads. $120,000.

▲ Tex., San Antonio—Bexar Co. Court House, Comrs. Court, general road imprvs., rehabilitation and surf. Precincts 1 2, 3, and 4, $2,350,000 each. Russell White, City Hall, engr.

Tex., Seminole—Gaines Co., Court House, general road imprvs., incl. resurf. $100,000. CD 12/19/47.

Tex., Sulphur Springs—Hopkins Co., Sulphur Springs, general road repairing, reconditioning, some surf., in areas north and south of here. $120,000. E. M. Greene, c/o owner, engr.

EARTHWORK, WATERWAYS

Mich., St. Joseph—Bd. Supervrs., Berrian Co., flood control sys., Paw Paw Lakes, $150,000. E. S. Brewer & Sons, Owosso, consult. engrs.

Tex., Garland—East Fork Land Owners Water Assn., c/o J. R. Gatewood, pres., Garland, 3 flood water retention dams, $450,000.

Tex., Garland—Lower Rowlett Creek Land Owners Addn., c/o Carl H. Herfurt, pres., Route 1, Garland, levees and few small dams to control flood waters of Rowlett Creek. $375,000.

Tex., Kerrville—Kerr Co., Court House, Kerrville, bond election Nov. 13, series of low-water dams as a flood prevention project. CD 9/26.

Tex., Mesquite—East Dallas County Land Owners Water Assn., c/o S. H. Whitehurst, pres., Mesquite, flood water control for tributaries of Trinity River, $600,000.

AIRPORTS

† **Colo., Colorado Springs**—MAINTENANCE SHOPS, ETC.—U. S. Eng., 1709 Jackson St., Omaha, Neb., auto maintenance shops and utilities for Ent Air Force Base, $369,000. Deits & Downer, Mining Exchange Bldg., consult. engrs. and archts.

▲ **Kan., Wichita**—AIRPORT—City Comrs., Emory L. Cox, dir., City Hall, airport, runways, hi-speed taxi strips, terminal bldg., on 1,900 acres, 5 mi. southwest of here. $10,000,000.

▲† **Md., Andrews Air Force Base**—AIR FORCE FACILITIES—U. S. Eng., First and Douglas Sts., N. W., Wash., D. C., plans by Victor E. De Mers, 1211-A Connecticut Ave. N. W., Wash., D. C., air force facilities; plans by J. E. Greiner Co., engr.-archt., 1201 St. Paul St., Baltimore, new facilities; plans by Whitman, Requardt & Assoc., engr.-archt., 1340 St. Paul St., Baltimore, global communication facilities. $17,541,000. CD 10/1.

Mass., Worcester—ADMINISTRATION BLDG.—City Airport Manager, Fowler St., plans by Cornelius W. Buckley, 311 Main St., 1 and 2 story, 62x282 ft., brick, cinder concrete block admin. bldg. $400,000. CD 10/14/48.

▲ † **Wash., Seattle**—TRAINING CENTER—U. S. Air Force, Pentagon Bldg., Wash., D. C., will not construct reserve training center at Boeing Field, $2,500,000, project abandoned. CD 3/28.

Wash., Seattle—HANGAR—Western Airlines, Skinner Bldg. and Pan American World Airways, 1302 4 Ave., Seattle hangar at Seattle-Tacoma Airport, Approx. $200,000.

AMERICANS ABROAD

New Zealand—Dpt. P. Wks., Wellington, wishes to negotiate with American Companies interested in undertaking construction of hydro-electric schemes. E. P. McKillop, Commissioner of Pub. Wks. will visit the United States to discuss projects.

LATIN AMERICA

Mexico, Chihuahua—Elaboradora de Metales S. A., Juarez, 2718, plans turbine water pumps factory. $200,000.

Mexico, Chihuahua—Tubos y Tanques de Scero, S. A. Nicolas Bravo, 2506 Chihuahua, plans iron and steel pipes factory. $300,000.

Mexico, Guadalajara—Productos Esmaltados, S. A., Manzano 127, Guadalajara, plans gas heaters factory. $200,000.

▲ **Mexico, Mazatlan**—Petroleos Mexicanos (Pemex), Juarez, 104, Mexico City, plans oil refinery. $6,000,000.

▲ **Mexico, Mexico City**—Deparamento Central (Lic. Fernando Casas Aleman) Palacio Municipal, Mexico City, plans sewerage. $2,080,000.

▲ **Mexico, Mexico City**—Petroleos Mexicanos (Pemex) Juarez, 104, plans hospital center for 20,000 employees. $1,000,000.

Mexico, Mexico City—Sria. de Defensa Nacional (War Dept.) Mexico City, plans 1,700 houses for soldiers and families. $400,000.

PUBLIC BUILDINGS

Calif., Azusa—GYMNASIUM, etc.—Azusa-Glendora Union High School Dist., $850,000, bond election Nov. 9, gymnasium and classrooms.

▲† **Calif., Long Beach**—HOSPITAL—Dpt. Navy, San Diego, plans by Albert C. Martin & Assocs., 333 S. Beaudry St., Los Angeles, 300-bed temporary hospital $3,800,000.

Calif., Salinas—HOSPITAL—Salinas Valley Memorial Hospital Dist., Salinas, defeated $500,000 bonds finishing hospital, Romie Lane and Wilgart St. CD 7/30.

▲ **Conn., Norwich**—SCHOOL—State P. Wks. Comr., State Office Bldg., Hartford, Regional Vocational School, $1,400,000.

Conn., Stonington—SCHOOL—Town Bd. Educ., 2 story, brick steel, concreted Junior and Senior High School, $900,000.

▲ **Conn., Willimantic**—SCHOOL—State Pub. Wks. Comr., State Office Bldg., Hartford, Conn., Regional Vocational School, $1,400,000.

▲† **Ga., Atlanta**—WAREHOUSE—U. S. Eng., Post Office Bldg., Savannah, plans by Logan Williams, Palmer Bldg., Atlanta, Warehouse No. 2. $1,250,000.

Ga., Gracewood—DORMITORY—Georgia State Dpt. P. Welfare, State Office Bldg., Atlanta, rebuild dormitory at Gracewood State Hospital, Approx. $700 000.

Idaho, Sandpoint — SCHOOL — School Bd., Sandpoint high school, $400,000.

▲ **Ill., Chicago**—HOUSING—Chicago Housing Auth., 608 S. Dearborn St., Zone 5, plans by Naess & Murphy, 80 E. Jackson St., Chicago, 4, Ill., housing and community bldg. in Altgeld Gardens Extension on 13 St. and C. & E. I. R.R. R/W, $5,000,000. CD 4/26.

Ill., Highland Park—SCHOOL—School Dist. 108, 495 Lincoln Ave., plans by Childs & Smith, 20 N. Wacker Dr., Chicago, 6, Ill., Junior High School $900,000.

Ill., Love's Park—SCHOOL—School Dist. 122, Love's Park, plans by R. A. Orput & Assocs., 206 S. Main St., Rockford high school, $800,000.

† **Ind., Jeffersonville**—SHOP—U. S. Eng., 830 W. Broadway, Louisville, Ky., 120x175 parachute repair shop with drying towers and laundry room $942,000. Allied Architects & Engineers, Indianapolis, Ind., archts. and engrs.

Ind., New Haven—SCHOOL—John H. Young, supt., Schools, Adams Twp. grade school on 20 acre site on southeast Anthony Wayne Dr. $600,000.

Ia., Des Moines—PHYSICAL EDUCATION—Bd. Educ., 620 3 St., physical education bldg. $557,463. CD 2/1/45.

Kan., McPherson—SCHOOL—Bd. Educ., School Dist. 20, Evaleight Kenney, clk., $600 000 bond election Oct. 23, school imprvs., addns. Schmidt, McVay & Peddie, 1832 E. 2 St., Wichita, archts.

▲ **Kan., Manhattan**—SCHOOL—Bd. Educ., F. V. Bergman, supt., plans by F. O. Wollenbarger, Ulrich Bldg., high school, $1,115,000. CD 4/11/50.

▲† **Ky., Frot Knox**—HOSPITAL—U. S. Eng., 830 W. Broadway, Louisville, permanent hospital to replace temporary field hospital. $13,000,000. CD 6/27.

▲ **Ky., Lexington**—DORMITORIES, etc.—University of Kentucky, S. Lime St., mens dormitory, $2,225,000; women's dormitory, $2,150,000; science bldg., $2,700,000. CD 5/20/48.

▲† **Md., Aberdeen Proving Ground**—LABORATORY and ENGINEERING—U. S. Eng., 24 St. and Maryland Ave., Baltimore, Zone 18, plans by Elkan Wiley Groll, 1830 Jefferson Pl. N.W., Wash., D. C., reinf.-con., structural steel, approx. 65,000 sq. ft. permanent type proof service laboratory and engineering bldg., incl. automatic sprinklers. $1,000,000. CD 11/17/50.

▲ **Md., Baltimore**—COURT HOUSE—City, Bureau Bldg. Constr., 410 Municipal Bldg., Zone 2, plans by Hal A. Miller & Assoc., 2118 Maryland Ave., Second Phase, repairs, remodeling second to sixth floors of court house, West Light Court Sect., $1,500,000, Egli & Gompf., Inc., 1019 N. Calvert St., mech. engr. L. P. Kooken Co., 2017 Maryland Ave., struct. engr. R. E. L. Williams, c/o owner, bldg. constr. engr. CD 3/24/44.

▲† **Md., Edgewood**—CHEMICAL CENTER—U. S. Eng., 24 St. and Maryland Ave., Baltimore, Zone 18, plans by Palmer, Fisher, Williams & Nes, engrs. and archts., 1020 St. Paul St., Baltimore, Zone 2, Laboratory Bldg., 330 addn., $995,000; plans by Rummel, Klepper & Kahl, engrs., and archts., 1021 N. Calvert St., Baltimore Zone 2, expansion Medical Research Laboratory, $850,000; plans by Turpin, Wachter & Assoc., engrs. and archts., 1004 N. Charles St., Baltimore, classified bldg. and storage bldg., $190,000; plans by B. F. Owens & Assoc., engrs. and archts., 213 N. Calvert St., Baltimore Zone 2, admin. and supply bldg. laboratory, $300,000, for Army Chemical Center. CD 3/1.

Mass., Amherst—HEALTH—University of Mass., R. D. Hawley, treas., Amherst, plans by M. A. Dyer Co., 24 School St., Boston, public health bldg. $500 000.

▲ **Mass., Holden** — SCHOOL — Towns Holden, Paxton, Princeton, Rutland and Sterling, plans by L. W. Briggs Assoc., Inc., 90 Park Ave., Worcester, 2 story bsmnt. Wachusett Regional High School. $1,500,000. CD 5/23/50.

Mass., Uxbridge—SCHOOL—Town, School Dpt., Walter McCloskey, supt., Capron St., school addn., Oak St. $420,000.

Mich., Detroit—HEATING FACILITIES—City, Pub. Lighting Comn., 174 E. Atwater St., heating facilities for Wayne University Medical School unit, incl. 1,100 ft. steam tunnel. $400,000, George R. Thompson, city engr. CD 3/30/43.

▲ **Mich., Kalamazoo**—PHYSICAL EDUCATION—State, A. N. Langius, dir., State Bldg. Dpt., Lansing, reinf.-con. physical education bldg., incl. fieldhouse, gymnasium, 50x75 ft. swimming pool etc. at Western Michigan College of Education, $1,500,000.

Minn., Minneapolis—CANCER RESEARCH—University of Minnesota. Bd. Regents, R. S. Callaway, purch. agent, 323 Admin. Bldg., Main Campus, plans by C. H. Johnston, 715 Empire Bank Bldg., St. Paul, cancer research bldg. on main campus between Millard Hall and Anatomy Bldg. $725,000.

Miss., Lucedale—FACTORY—George Co., c/o county clk., voted $600,000 bonds, factory for Great Southern Box Co.

† **Mont., Missoula** — HEADQUARTERS — U. S. Forest Service, Independence Ave. between 12 and 14 Sts. S.W., Wash., D. C., headquarters for "smokejumper" crews. $970,000.

Neb., Omaha—SCHOOL—Bd. Educ., 3902 Davenport St., plans by N. S. Wallace, Omaha Natl. Bank Bldg., Monroe School and imprv. present bldg. $665,000. CD 2/27.

N. J., Camden—SCHOOL—Bd. Educ., City Hall, plans by Edwards & Gfeen, 17 S. 5 St., Camden, Alberta Woods Elementary School, $500,000. CD 1/2.

N. J., Mount Holly—SCHOOL—Mount Holly Bd. Educ., Mt. Holly, plans by Micklewright & Mountford, 72 Ewing St., Trenton school, Jacksonville Rd. and Clove St., Approx. $300,000.

▲ **N. Y., Carle Place**—SCHOOL—School Bd., Union Free School Dist. 2, Carle Place, school on 17 acre site at Cherry Lane and Roslyn Ave. $1,235,000.

N. Y., New York—HALL OF RECORDS—Dpt. P. Wks., Municipal Bldg., Zone 7, plans by Embury & Lucas, 150 E. 61 St., Zone 21, Hall of Records alterations, 25 Chamber St. $300,000.

▲ **N. C., Winston-Salem** — HOUSING — Winston-Salem Housing Auth., Reynolds Bldg., 263 housing units for Negroes northern sect. of city. $2,000,000.

O., Lisbon—JAIL—Comrs. Columbiana Co. Court House, plans by Robert F. Beatty East Liverpool, 2 story bsmnt., brick, stone jail. $780,000. CD 8/1.

R. I., Jamestown—SCHOOL—Town, Anthony Miller, Supt. Schools, plans by MacConnell & Walker, 3308 Post Rd., Warwick, school. $600,000. CD 11/1/50.

Tex., Alamo Heights—SCHOOL—Alamo Heights Independent School Dist., Alamo Heights, via San Antonio, plans by Harvey P. Smith & Assoc., 1204 Natl. Bank Commerce Bldg., San Antonio, school. $450,000. CD 9/26.

▲ **Tex., El Paso**—HOUSING—El Paso Housing Auth., El Paso, plans by Louis L. Molliner, 701 Caples Bldg., 150-unit housing, $1,125,000; 100 unit housing, $1,350,000. CD 3/14/51.

Tex., Palestine—SCHOOLS—Palestine Independent School Dist., Palestine, voted bonds, Negro High School $300,000; elementary school remodeling, $325,000. CD 9/12.

▲† **Va., Fort Belvoir**—BARRACKS, FACILITIES—U. S. Eng., 1st and Douglas Sts., N. W., Wash. 25, D. C., plans by Wiley & Wilson, archts.-engrs. 1022 20th Ave. N. W., Wash. D. C., 500-man barracks; plans by Hugh B. Johnson, archt.-engr., 1129 Vermont Ave. N. W., Wash. D. C., design of new facilities $16,761,200.

Wash., Bellevue—SCHOOL—School Bd., bond election Nov. 6, Enetai School, $450,000; high school addn., $500,000. Naramore, Bain, Brady & Johanson, 904 7 Ave., Seattle, archts. CD 6/28.

▲ **Ont., Toronto**—HOSPITAL—Toronto General Hospital, 101 College St., plans by Mathers & Haldenby, 25 St. Mary St., hospital and modernization existing wards, 4 story surgical operation bldg., 4 story emergency admitting bldg., nurse residence, obstetrics bldg., eye service bldg. Wellesley Bldg., $14,000,000. CD 8/29.

COMMERCIAL BUILDINGS

Mass., Framingham—DORMITORIES—Boys' Town of Massachusetts, Fred Amerchodian, exec. dir., 462 Boylston St., Boston, plans by Alexander Anker, 27 Oliver St., Watertown, 3 dormitories, $600,000.

Mich., Detroit—SERVICE—The Salvation Army, 719 N. State St., Chicago 10, Ill., plans by A. C. Fellow Cowners, 719 N. State St., Chicago 10, Ill., service bldg. addn., 6 and Howard Sts. $500,000.

Mich., St. Clair Shores—CHURCH—St. Jean of Arc Parish St. Clair Shores, plans by Diehl & Diehl, 120 Madison St., Detroit, 1 story. bsmnt., brick, stone church. Overlake Dr., $400,000.

Minn., Thief River Falls—HOSPITAL—Northwestern Hospitals Assn., L. B. Harts, Thief River Falls hospital addn., incl. two 32-bed nursing units, $600,000.

▲ **N. J., Thorofare**—RESIDENTIAL DEVELOPMENT—Woodbury Manor, Inc., Broad and Cooper Sts., Woodbury, plans by Dante D'Anastasio, 1815 Federal St., Camden residential development, Oak Valley Section, $12,000,000.

N. J., Trenton—COMMUNITY CENTER—Jewish Community Center, 143 E. State St., plans by Louis Kaplan, 25 N. Montoomery St., community center, Parkway Ave. $500,000. CD 12/1/47.

▲ **N. Y., Elmhurst** — APARTMENT — Belbar Building Corp., c/o Julius Fishkind, archt., 161-19 Jamaica Ave., Jamaica, N. Y., 6 story apartment, Elmhurst Ave., east of Broadway. $1,950,000.

▲ **N. Y., Flushing**—APARTMENT—Samule Lefrak, c/o Julius Fishkind, archt., 161-19 Jamaica Ave., Jamaica, two 6 story apartments on east and west sides of Union St. south of Cherry Ave. $1,910,000.

▲ **N. Y., Flushing**—APARTMENT—H. J. Levine, c/o Morris Rothstein & Sons, archts., 186 Joralemon St., Brooklyn, Zone 2, two 6 story apartments, 76 Rd., southwest corner of 150 St., and 76 Rd., northwest corner of 150 St. $3,000,000.

N. Y., Jackson Heights — APARTMENT — Fisher & Friedland, c/o Julius Fishkind, archt., 161-19 Jamaica Ave., Jamaica, 6 story, 85x180 ft. apartment, 37 Ave and 72 St. $612,000.

N. Y., New York—APARTMENT—College Gardens Corp., 400 E. Fordham Rd., Zone 58, plans by Herbert

Lillien, 201 W. 72 St., Zone 23, 6 story apartment, King College Pl. and 211 St. **$865,000.**

▲ **N. Y., New York**—APARTMENTS—Columbia University, Barnard College, Corpus Christi Church, International House, Jewish Theological Seminary, Juilliard School of Music, Riverside Church, Teachers College, and Union Theological Seminary, c/o Rev. George B. Ford, 520 W. 121 St., plans by W. K. Harrison-H. H. Goldstone, assoc. archts., 45 Rockefeller Plaza, and Skidmore, Owings & Merrill, archts, 585 Madison Ave., New York, six 20 story apartments, Broadway, LaSalle St., Amsterdam Ave., and W. 123 and 124 Sts. **$12,567,226.**

N. Y., New York — JEWISH CENTER — Congregation Habonim, Inc., 200 W. 72 St., Zone 23, plans by Fritz Nathan, 200 Central Park South, Zone 19, 3 story Jewish Center, 42-46 W. 66 St. **$450,000.**

N. Y., New York—OFFICE—Franklin Stores Corp., 519 8th Ave., Zone 18, plans by Emery Roth & Sons, 18 E. 48 St., Zone 17, 8 story office bldg. and distribution center, 326-32 W. 40 St. **$810,584.** Farkas & Barron, 150 Broadway, Zone 7, consult. engrs.

▲ **N. Y., New York**—APARTMENTS—Rosedale Constr. Co., 371 E. 149 St., Zone 55, plans by A. & S. Goldhammer, 6 Varick St., Zone 13, 6 story apartment, Bruckner Blvd. and Elder Ave. **$850,000;** 6 story apartment, Bruckner Blvd. from Wheeler to Elder Ave. **$750,000;** 6 story apartment, Elder Ave., north of Bruckner Blvd. **$860,000.**

N. Y., New York—APARTMENT—W. E. S. Contracting Corp., 2126 Muliner Ave., Zone 60, plans by David Kraus, 1947 Broadway, Zone 23, 3 story apartment, Bogart Ave. and Woodmansten Pl. **$300,000.**

▲ **N. Y., Troy**—DORMITORY—Rensselaer Polytechnic Institute, Troy, 4 dormitory units. **$2,880,000.**

▲ **Tenn., Nashville**—DEPARTMENT STORE—Cain-Sloan Co., 209 5th Ave. N., department store expansion. $5,000,000.

Tex., Amarillo—DWELLINGS—Munday-Cooper Co., Amarillo, 70 frame rental dwellings, concrete slab fdn. east of here. **$560,000.**

Tex., Amarillo—DWELLINGS—Ricks-Maguire Constr. Co., Amarillo, 50 frame, rental dwellings, concrete slab fdn., east of here. **$400,000.**

Tex., Amarillo—DWELLINGS—Troy Jones Constr. Co., Amarillo, 84 rental dwellings, east of here. **$672,000.**

Tex., Houston—DWELLINGS—Townsend Constr. Co., 3525 Westheime Rd., 25 frame dwellings, concrete slab fdn. **$300,000;** 25 frame and asb. siding dwellings, concrete slab fdn. **$300,000;** 27 frame, asb. siding, dwellings, concrete footings and cedar post, **$322,000,** on 26 acre tract, frontage on Post Oak Rd.

▲ **Wis., Milwaukee**—DORMITORY—Marquette University, 615 N. 11 St., Milwaukee, Wis., dormitory, $1,000,000.

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▲ **Ont., Cornwall**—HOSPITAL—Religious Hospitallers of St. Joseph, Kingston, plans by Drever & Smith, 81 ~~Brock St.,~~ Kingston, 250-bed T-shaped, reinforced steel, concrete, brick hospital addn., **$2,500,000.** CD 12/23/49.

INDUSTRIAL BUILDINGS

▲ **Calif., Van Nuys**—PLANT—Wm. R. Whittaker Co. Ltd., 915 N. Citrus Ave., Los Angeles, plant. **$1,250,000.**

▲ **Ill., Maunee**—GENERATING PLANT—Association of Illinois Electric Co-operatives, 524 E. Capitol St., Springfield, electric generating plant on Wabash River. **$5,000,000.** Laramore & Douglas, 79 E. Adams St., Chicago, Zone 3, consult. engrs.

▲ **Ind., East Chicago**—MILL ADDNS.—Youngstown Sheet & Tube Co., Stambaugh Bldg., Youngstown, O., No. 2, open hearth furnace bldg., **$6,623,000;** fluming mill and soaking pit, **$175,000;** Bessmer Stripper Bldg., **$125,000;** Tube MILL ENT and rigid conduit plant, **$81,800;** hot strip mill and coil storage bldg., **$36,000** all 1 story, rein.-con., masonry, steel. H. C. Williamson, c/o owner, engr. CD 12/28/50.

Kan., Kansas City—PLANT—R. L. Sweet Lumber Co., Robert L. Sweet, pres., 4400 Roe St., RFD from Kansas City, plant, **$400,000.**

▲ **Md., Middle River (Br. Baltimore)**—PLANT—The Glenn L. Martin Co., C. G. Pearson, pres., Middle River, plans by Whitman, Requardt & Assoc., engrs. and archts., 1304 St. Paul St., Baltimore, Zone 2, 2 story, 425x600 ft., rein.-con., steel extension to AA building airplane plant, **$2,500,000.**

▲ **Mich., Flint**—PLANT—Chevrolet Motor Div., General Motors Corp., 3044 W. Grand Blvd., Detroit, Zone 2, plans by H. E. Beyster & Assoc., Inc., engr. and archt., Industrial Bank Bldg., Detroit, Zone 26, 1,000,000 sq. ft., steel, glass, aviation engine plant, **$15,000,000.**

Minn., Minneapolis—PLANT—Electric Machinery Mfg. Co., 1331 N.E. Tyler St., expand plant, 821 Second Ave. N.E., incl. addn. of 200 ft. bay for increased electrical-controls output for large motors and generators, 30,000 sq. ft. shop next to Central Ave. and Southeast 8 St., **$500,000.**

▲ **Mo., Kansas City**—PLANT—Benson Mfg. Co., 1811 Agnes St., plans by J. F. Lauck, 6225 Brookside St., Kansas City, Mo., enlarging plant, **$2,000,000.** CD 12/28/50.

▲ **N. J., Pennsauken**—BAKERY—General Baking Co., 420 Lexington Ave., New York, N. Y., bakery, **$1,000,000.**

N. Y., Brooklyn—FACTORY—Kenway Realty Co. Inc., 6101 16th Ave., Zone 4, plans by William A. Lacerenza, 44 Court St., Zone 2, 6 story factory, 1462-84 62 St. **$900,000.**

▲ **O., Maple Grove**—REFRACTORY—Basic Refractories, Inc., Hanna Bldg., Cleveland, brick and materials works refractory. **$4,000,000.** MacDonald Eng. Co., 188 W. Randolph St., Chicago 1, Ill., consult. engr. CD 7/27.

Okla., Cushing—PLANT—Deep Rock Oil Corp., Cushing, packing plant for motor oils and greases. **$750,000.**

Tex., Emory—PLANT—Shell Oil Co., Shell Bldg., Houston, sulphur extraction plant. **$500,000.**

W. Va., Tridelphia—PLANT—Valley Camp Coal Co., Western Reserve Bldg., Cleveland, O., coal processing works plant, **$500,000.** Allen & Garcia, 332 S. Michigan St., Chicago 4, Ill., consult. engrs.

▲ **Newfoundland, Corner Brook**—PLANT EXPANSION—Bowater Newfoundland Pulp & Paper Mills, Ltd., Corner Brook, paper mill expansion new office bldg., wing addn. to company's hotel, etc., **$10,000,000.** CD 6/28/46.

▲ **Newfoundland, Octagon**—PLANT—Canadian Machinery & Industry Ltd., St. Johns, (Div. of Miag Ltd., Hanover, Germany) machine plant on Octagon Lake 8 mi. west of St. Johns, **$5,000,000.**

▲ **Ont., Toronto**—FACTORY—Canadian General Electric Co. Ltd., 212 King St. W., plans by Sproatt & Rolph, 83 Cumberland St., transformer factory to be built on 140 acre site in Etobicoke industrial area also 200 houses for staff, **$12,000,000.** Proctor, Redfern & Laughlin, 11 Jordan St., consult. engrs. CD 8/2.

▲ **Que., Barraute**—REFINERY—Barville Mines Ltd., Barraute, Que., refinery for base metals, **$5,000,000.**

Que., Chicoutimi—PULP MILL—Chicoutimi Pulp Mills Ltd., Chicoutimi, general rehabilitation pulp mill Approx. **$500,000,** Stadler, Hurter & Co., 1117 Ste. Catherine St. W., Montreal, engrs.

▲ **Que., Gaspe**—MILL—Gaspe Copper Mines Ltd., Royal Bank Bldg., Toronto, Ont., mill for concentrating low grade copper ore, Needle Mountain, Approx. **$5,000,000.** CD 6/19/50.

UNCLASSIFIED

Missouri — RURAL DISTRIBUTION LINES — Se-Ma-No Electric Co-operative, Mansfield, 69 mi. rural distr. lines, sys. improvs., Wright Co. **$530,000.**

Tex., Dallas—STADIUM—State Fair of Texas, c/o State Fair Grounds, R. L. Thornton, pres., Dallas, 50,000 seating capacity "Cotton Bowl" stadium expansion **$850,000.** CD 2/3/49.

▲ **Alberta**—PIPE LINE—Texaco Petroleum Products 10503 107 St., Edmonton, 42 mile pipe line from Wizard Lake oil field to McColl-Frontenac Co. oil refinery in Edmonton, Approx. **$2,500,000.** CD 9/28.

CONSTRUCTION REPORTS-Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
October 23, Massachusetts
STREETS AND ROADS
October 22, Connecticut October 23, 30, Massachusetts

BIDS ASKED—BUILDINGS

Mass., Hamilton—SCHOOL—B.A. 10/23—Town, Supt. Schools, High School, Hamilton, construct elementary school and high school addns., alterations, $575,000. Anderson & Nichols & Co., 53 State St., Boston, archts. CD 8/8, under LB.

Conn., Bridgeport—SCHOOL—B. A. 10/24—City Bd. Educ. City Hall, Francis P. Dunigan School. CD 2/7.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

NEW HAMPSHIRE—Dpt. P. Wks. & Hys., Concord.

Constantino Constr. Co., Inc., 22 Dix Ave., Johnston, R. I. LB. **$118,760**. surf. tr. grav. 2.223 mi. N. H. 13, in Dunbarton. Bids Sept. 27. CD 9/19.

Joseph P. Carrara, Clarendon, Vt., CA. Approx. **$100,000**. State Aid Bridge, RUTLAND, VT. Town, Rutland, Vt. Bids Sept. 11.

CONNECTICUT—State Hy. Dpt., State Office Bldg., Hartford.

D. V. Frione & Co., Inc., 87 Foxon St., New Haven, Conn., LB, **$149,568**, 53 ft. 7-in. sq. span girder bridge and 375 lin. ft. concrete approaches over Main St., on East Hartford-Glastonbury Expressway, East Hartford. Bids Aug. 20. CD 8/9.

BUILDINGS

LOW BIDS AND CONTRACTS

Verrier Constr. Co., 65 Commercial St., Portland, Me., CA. Approx. **$500,000**. WAREHOUSE and OFFICE, Fore and Cross Sts., PORTLAND, ME. Pine State Beef Co., 224 Commercial St., Portland, Me. Engineering Services, Inc., 844 Stevens Ave., Portland, Me., archt.

▲ **Saunders Eng. Co.**, 415 Congress St., Portland, Me., CA Approx. **$1,500,000**. addns. to existing BLDGS. and KILN, THOMASTON, ME. Lawrence Portland Cement Co., 150 Broadway, New York, N. Y. CD 9/27.

▲ **John Bowen Co.**, 173 Boston St., Dorchester, Mass., LB. **$11,179,526**. Contr. 1, PH8, Chronic Disease HOSPITAL and NURSES HOME, Morton St., Forest Hills, BOSTON, MASS. State Dpt. P. Health, State House, Boston, Mass. Bids Oct. 5. CD 9/28.

▲ **Sumner D. Hersey, Inc.**, 1 N. Main St., Natic, Mass., Separate Contracts. Approx. **$3,000,000**. 200 HOUSES, Lake Cochituate Oaks off Old Connecticut Path, FRAMINGHAM, MASS. Weyerhaeuser Plans Service, Castle Island, South Boston, Mass.

Omer Chartier, State St, Granby, Mass., Owner builds. Approx. **$600,000**. 72 RESIDENCES, Prospect St., HOLYOKE, MASS.

Theodore H. Engvall, 7 Barrows Rd., Shrewsbury, Mass., CA. Approx. **$100,000**. LABORATORY, SHREWSBURY, MASS. Worcester Foundation for Experimental Biology, 222 Maple Ave., Shrewsbury, Mass. Bids Sept. 25.

Walter H. Barker, Inc., 23 Main St., Taunton, Mass., CA. **$450,000**. 1 story, 80x257 ft., cinder block steel rolling MILL, Fifth St., TAUNTON, MASS. Franklin Mfg. Inc., Joseph Zuckerburg, pres., 530 Main St., Providence, R. I.

▲ **John Capobianco**, 44 School St., Boston, Mass., CA. **$1,676,000**. JUNIOR HIGH SCHOOL, Chandler St., WORCESTER, MASS. City, School Dpt., City Hall, Worcester, Mass. Bids Sept. 25. CD 10/1, under LB.

Industrial Constr. Co., 120 Prospect St., Hartford, Conn., CA, **$300,000**, BUILDING addn., alterations, 52 East Center St., MANCHESTER, CONN. Southern N. E. Telephone Co., Church St., New Haven, Conn. Douglas Orr, 111 Whitney Ave., New Haven, archt.

State P. Wks. Dpt., Hartford, Conn., rejected bids July 6, boiler house and utilities, State Teachers College, B A R-47B, NEW HAVEN, CONN. L.B. **$208,323**. CD 7/17, under LB.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
November 2, Pennsylvania
STREETS AND ROADS
October 24, New York November 2, Pennsylvania

New York—B.A. 10/22—President Queens Boro, 120-55 Queens Blvd., Kew Gardens, Zone 15, grading, regrading, curbing, recurbing, flagging, reflagging, b. conc. paving, 24 St., 34, 35 and 36 Aves.; constructing receiving basins, etc. CD 7/16/48.

N. Y., New York—B.A. 10/23—President Manhattan Boro, Municipal Bldg., Zone 7, Contr. 173, grading, curbing, laying sidewalks, landscaping and permanent sheet asph. paving Franklin D. Roosevelt Dr. (westerly service street) from E. 53 to E. 54 Sts., etc. Plans deposit $25. CD 9/13.

Md., Annapolis—B.A. 10/25—City, Municipal Bldg., Contr. 4, Parole and Tyler Street Sewage Pumping Stations. Part of $2,500,000. Plans deposit $5. Whitman, Requardt & Assoc., 1304 St. Paul St., Baltimore, engrs. CD 2/7/45.

N. Y., New York—B.A. 10/25—President Bronx Boro, Bronx County Bldg., 851 Grand Concourse, Zone 51, sewer, appurtenances in E. 233 St., between DeReimer Ave. and Grenada Pl.; in Grenada Pl. and Laconia Ave. CD 4/1/48.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW JERSEY**—State Hy. Dpt., State Hy. Office Bldg., Trenton.

Villa Contg. Co., 233 North Avenue W., Westfield, N. J., LB. **$1,446,831**, Sections 6 J and 7D of Route 4 Parkway (bridges at Myrtle Ave., Lehigh Valley RR tracks and Staten Island Rapid Transit Railway tracks, plus grading) Cranford Twp., Union Co. Bids Oct. 9. CD 9/20.

▲ **Municipal Auth.**, Boro Hall, 202 Washington St., Morrisville, Pa., rejected bids Sept. 27, sanitary sewerage sys. and sewage treatment plant, MORRISVILLE, PA. L.B. **$3,200,000**, est. $2,200,000. CD 10/2, under LB.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2.

T. Edgie Russell, Frederick, Md., LB. **$64,559**, resurf. 5.9 mi. U. S. Route 40, Contr. F 526-615, Frederick Co.;

Eastern Highways Corp., Box 2738, Baltimore, Md., LB. **$121,380**, slag, **$112,584**, gravel, wid'n., resurf. 2.27 mi. State Rte. 309, Cont. T-145-1-214, Talbot Co.;

T. B. Gatch & Sons, 5928 Belair Rd., Baltimore, Md., LB. **$238,642**, stone, **$218,412**, gravel, **$215,634**, slag, b. conc. wid'n and resurf., 6.679 mi. State Rte. 50, Contr. D-232-115, Dorchester Co.;

McGuire & Rolfe, Inc., 1401 1st St., S. E., Wash. D. C., LB. **$86,480**, wid'n, resurf. 2.58 mi. State Rte. 214, Contr. P-701-515, Prince Georges Co.;

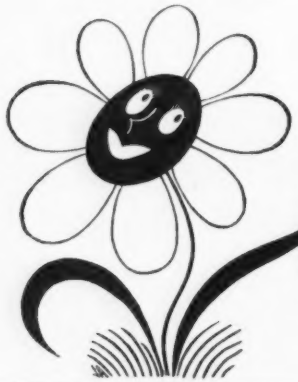
Sam Finley, Inc., Box 2389, Roanoke, Va., LB. **$362,038**. grading, drainage, wid'n. 2.878 mi. State Rte.

(Continued on page 99)

how white is white?

In William Shakespeare's words:

"... *perfect white shows like an April daisy in the grass* ..."



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Model 639 with 10 H. P. electric motor—Models also available with air cooled gasoline engines.

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FAIRFIELD

The FAIRFIELD ENGINEERING COMPANY
354 Chicago Avenue • Marion, Ohio

(Continued from page 97)

71, Contr. F 508-615, Frederick Co. Bids Oct 2. CD 9/19.

Force Constr. Co., Inc., 420 S. Kresson St., Baltimore, Md., LB, $98,995, railroad sidetracks at University of Maryland, COLLEGE PARK, MD. State, Dpt. P. Improvement, 506 Park Ave., Baltimore 1, Md.

▲ **DELAWARE**—State Hy. Dpt., Dover,

James Julian, Elsmere, Del., LB, $1,009,030, Records Pond, Contr. 1103; Nanticoke River, Contr. 1104; and Nanticoke River (North Fork), Contr. 1105 Combined;

Whiting Turner Constr. Co., Stoney Creek Rd., Baltimore, Md., LB, $515,219, bridge Nanticoke River Contract 1104;

Delmarva Asphalt Co., Seaford, Del., LB, $173,079, bridge Nanticoke River (North Fork) Contract 1105; received no single bid Sept. 26 bridge Records Pond Cont. 1103, all foregoing in Sussex Co. CD 9/10.

† **Frederick Snare Corp.**, 233 Broadway, New York, N. Y. CA, construct facilities located Lages Field, incl. P.O.L. system, water supply and distr. sys., 40-units housing, V. H. F. sys. and A.S.R. and G C A systems, AZORES, U. S. Eng., 80 Lafayette St., New York, N. Y.

BUILDINGS

LOW BIDS AND CONTRACTS

C. B. Constr. Co., 540 East New York Ave., Brooklyn 25, N. Y., LB, $91,649, Rockaway CORPORATION YARD and GARAGE, Beach 75 St., and Amstel Blvd., ROCKAWAY, N. Y. President Queens Boro, 120-55 Queens Blvd., Kew Gardens 15, N. Y. Bids Oct. CD 9/20.

▲ **Laurence J. Rice**, 30 Deepdene Rd., Forest Hills, N. Y. LB, $1,183,600, SCHOOL P. S. 193, 152 St. between 11 and 12 Aves., Spec. Nos. 58-59-61-61, WHITESTONE, N. Y. Supt. School Bldgs., Design and Constr., 49 Flatbush Ave. exten., Brooklyn 1, N. Y. Bids Oct. 3. CD 9/25.

▲ **Walter Kidde Constructors, Inc.**, 140 Cedar St., New York 6, N. Y., CA, $1,500,000, foundation for 1 story, 450x720 ft., PLANT Addn. CLARK, N. J. Hyatt Roller Bearings Div. of General Motors Corp., Raritan Rd.

Walter J. Crismer & Son, Inc., 5453 Fairlawn Ave. Baltimore 15, Md. CA, $600,000, 64, 32x26 ft., masonry RESIDENCES, 3800 Southern Cross Dr., near BALTIMORE, MD. Fairview Gardens, Inc., Campfield Rd., Baltimore, Md.

Charles H. Tompkins, 907 16 St. N. W., Wash., D. C., CA, $250,000, 240-car low level GARAGE, WASH., D. C. Woodward & Lothrop, Inc., 11 and G Sts. N. W., Wash., D. C. A. R. Clas, Shoreham Bldg., Wash., D. C., archt. Otto G. Vogt, 1636 Connecticut Ave. N. W., Wash., D. C. engr.

▲ **John Tester & Son**, 1427 Eye St. N. W., Wash., D. C., LB, (A) $2,564,407, (B) $2,467,407, 344-bed 4 story INFIRMARY and LAUNDRY BLDG. at Home for Aged and Infirmed, Blue Plains, WASH., D. C. Dist. Govt. District Bldg., Wash., D. C. Bids Oct. 9. CD 9/12.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

† **N. C., Cherry Point**—APRONS—B.A. 10/25—Sixth Naval Dist., Charleston, S. C., parking aprons, vicinity Hangar 3, Marine Corps Air Station, NOY 29386, Spec. 31086. Extended date. CD 9/12.

† **S. C., Greenville**—APRON—B.A. 10/29—U. S. Eng., 33 Custom House, Charleston, exten. and addn., East-West Parking Apron. CD 9/25.

Miss., Natchez—B.A. 10/30—Adams Co., grading paving 2.193 mi. between Pine Ridge and Anna. E. B. Carvallo, Barnett-Madden Bldg., Jackson, engr. CD 9/27/50.

BIDS ASKED—BUILDINGS

N. C., Glade Valley—ADMINISTRATION and DORMITORY—B.A. 10/23—Glade Valley, Inc., J. A. Kellenberger, chn., Greensboro, administration bldg. and dormitory. Plans deposit $25. Macklin & Stinson, 226 N. Trade St., Winston-Salem, archts. Bids Mar. 20 rejected, L. B. $373,600. CD 3/29, under LB.

Fla., Clearwater—SCHOOL—B.A. 10/24—Pinellas Co. Bd. P. Instruction, 305 Haven St., Clearwater, 74th Street School. Philip F. Kennard, 105 2 Ave., N.E., St. Petersburg, archt. CD 10/18/46.

† **Va., Alexandria**—BATTERY CHARGING SHOP—B.A. 10/24—Pub. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., battery charging shop at Franklin St. Annex, Naval Gun Factory, Spec. 32118. Extended date. CD 10/5.

† **N. C., Camp Lejeune**—SCHOOL—B.A. 10/25—Housing & Home Finance Agency, 1200 Gimbel Bldg., 35 S. 9 St., Phila., Pa., alterations, addns. to Midway Park School, Proj. NC 51-C Fed. 2-A. Plans deposit $25. B. H. Stephens, 504 Pollock St., New Bern, archt.

Fla., Miami—SHOP—B.A. 10/30—Dade Co., Court House, shop bldg. at Jackson Memorial Hospital. Plans deposit $30. Steward & Skinner, 23 S.E. First St., archts.

▲ **N. C., Wilmington**—HOUSING—B.A. 11/1—Wilmington Housing Auth., Nesbitts Ct., 150 housing units, $1,200,000. Lynch & Foard, 202½ Princess St., Wilmington, archts.

▲ **Miss., Jackson**—HOSPITAL—B.A. About 11/15—St. Dominic's Hospital, c/o James T. Canizaro, archt., Deposit Guaranty Bank Bldg., 6 story hospital. Approx. $2,000,000. CD 4/29/46.

SOON LETS CONTRACT—BUILDINGS

Ala., Opelika—MILL—Opelika Mfg. Corp., Opelika, soon lets contract, third addn. to existing mill. Robert & Co. Assoc., 96 Poplar St., Atlanta, Ga., archts.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Aaron J. Conner, Rte. 2-Box 54, Roanoke, Va., CA, $537,300, Sewage disposal plant, HARRISONBURG, VA. City, Harrisonburg, Va. Bids Sept. 26. CD 10/3, under LB.

J. Kennon Perrin Co., 5 and Cary Sts., Richmond, Va., LB, $127,236, terminal bldg. and control tower for Patrick Henry Airport, NEWPORT NEWS, VA. Peninsular Airport Comm., Newport News, Va. Bids Oct. 4. CD 9/14.

City, c/o Construction Dpt., City Hall, Atlanta, Ga., Owner Builds, $325,000, resurfacing Ivy, Mitchell, Tattnall and Hunter Sts., ATLANTA, GA. CD 8/27/46.

† **Fred Howland, Inc.**, 1451 N.W. 20 St., Miami, Fla., LB $298,829, five buildings at Pinecastle Air Force base, near ORLANDO, FLA. U. S. Eng., 575 Riverside Ave., Jacksonville, Fla. Bids Oct. 5. CD 9/17.

E. N. Murray, Buena Vista, Ga., CA, $173,637 water distr. sys. addns., COLLEGE PARK, GA. City, College Park, Ga. Bids Oct. 2. CD 8/24.

† **Duval Eng. & Contg. Co.**, foot of E. Adams St., Jacksonville, Fla., CA, $671,793, skid strip at Patrick Air Force Base, ENG 08-123-52-38, COCOA, FLA. U. S. Eng., 575 Riverside Ave., Jacksonville, Fla. Bids Oct. 2. CD 10/9, under LB.

Whitmore Elec. Co., Langford Bldg., Miami, Fla., CA $146,897, underground electric distr. sys. at Jackson Memorial Hospital, MIAMI, FLA. Dade Co. Court House, Miami, Fla. Bids Oct. 2. CD 9/26.

E. N. Murray, New Smyrna, Fla., CA, $163,969, installing water mains addns., NEW SMYRNA FLA. City, New Smyrna, Fla. Awarded Oct. 4.

LOUISIANA—State Hy. Dpt., Highway Office Bldg., Baton Rouge,

Henry & Hall, Dubach, La., LB, $283,280, grav. base course, three constructions bit. surf. tr. (asph. cement) 6.803 mi. Hwy. Ridge-Epps Hy., State Rte. 550, S.P. 185-01-03, F. A. Secondary Proj. S-67 (2), Richland Parish; LB $366,866, soil cement base course, grav. or shell base course bit. surf. tr. (asph. cement) 7.48 mi. Opelousas-Arnaudville Hy., State Rte. 25, St. Landry Parish.

W. R. Core, Box 321, Glenmora, La., LB, $124,750, aggregate base course or alternate soil cement base course, bit surf. tr. 8.1 mi. Pitkin-Elizabeth Hy. State Rt. 22, S. P. 66-03-10 and 66-04-11, Allen and Vernon Parishes. Bids Oct. 3. CD 9/14.

LOUISIANA—State Hy. Dpt., Hy. Office Bldg., Baton Rouge,

Austin Bridge Co., Box 1590, Dallas, Tex., LB $64,686, repairs to lubrication of end wedge machinery and open grid bridge flooring on swing span 0.418 mi. Black River Bridge (Jonesville) State Rt. 6, S. P. 22-96-09, Catahoula and Concordia Parishes; LB $118,699, bridge consisting of five 30 ft. I-beam spans and one 65 ft. future vertical lifht span, b. conc. approaches over Bayou Lafourche at Labadieville, S. P. 804-35-02, Assumption Parish. CD 9/19 and 9/5. Bids Oct. 3.

KENTUCKY—State Hy. Dpt., Frankfort,

rejected bids Sept. 28, grading, draining, traffic bound 3.11 mi. Manchester-Pineville Rd., S-325 (4), SP 7-24, 26-105, Bell and Clay Counties, LB $118,914, reconstr., traffic bound slag 2.939 mi. Ratcliff Creek Rd., RS 08-923 Pike Co., LB $69,389, received no bids Sept. 28, traffic bound 2.84 mi. and 1.471 mi. Ratcliff Creek Rd., RS 98-923 Pike Co. CD 10/8, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Dan River Mills, Danville, Va., Owner Builds, $220,000, PLANT addn., DANVILLE, VA. CD 9/26/50.

State Hospital Bd. of Control, Raleigh, N. C., rejected bids Sept. 6, DAIRY BARN at Hospital, GOLDSBORO, N. C. L. B. $113,162. CD 9/18, under LB.

Thos. B. Mims, 465 Brentwood Dr. N.E., Atlanta, Ga., Owner Builds, Approx. $485,000, machine SHOP, ATLANTA, GA.

▲ **Maxon Constr. Co., Inc.**, 1733 Chapel St., Dayton, O., CA, $25,000,000, Container Board, MILL, ROME, GA. Rome Kraft Co. (Mead Corp.), 118 W. 1 St. Dayton, O. and Inland Container Corp., 700 W. Morris St., Indianapolis 6, Ind.), Rome, Ga. CD 6/20.

Knox Constr. Co., Thomson, Ga., CA, $404,637, 54 HOUSING units, ROYSTON, GA. Royston Housing Auth., Royston, Ga., Bids Oct. 4. CD 9/18.

G. T. Porter, 433 N.E. 11 Ave., Fort Lauderdale, Fla. CA, $300,000, HOTEL, FORT LAUDERDALE, FLA. West Constr. & Eng. Co., 716 N.E. 7 Ave., Fort Lauderdale, Fla.

Weymer & Martin, 543 N. Atlantic Blvd., Fort Lauderdale, Fla., CA, $300,000 APARTMENT DEVELOPMENT, FORT LAUDERDALE, FLA. George Ehret, c/o contractor.

H. C. Hood, 1011 Hendrick Ave., Jacksonville, Fla., LB, $392,977, Billmore School addns.;

Demetree Builders, 1619 Hendricks Ave., Jacksonville, 7, Fla., LB, $320,250, Oceanway New Elementary SCHOOL, JACKSONVILLE, FLA. Duval Co. Bd. P. Instruction, 605 Ocean St., Jacksonville, Fla. Bid Oct. 3.

East Coast Constr. Co., 1514 Gary St., Jacksonville, 7, Fla., CA, $310,000 SUPERMARKET, Beach Blvd. and South Side Eastate Shopping Center, JACKSONVILLE, FLA. Jacksonville Meat Co., Broad St., Jacksonville, Fla. Awarded Oct. 3.

Cadillac Bldg. Corp., 211 N.E. 97 St., Miami, Fla., Owner Builds, Approx. $300,000, RESIDENTIAL DEVELOPMENT at Arch Creek Estates, MIAMI, FLA.

Burk Constr. Corp., 1017 Kane Concourse, Miami Beach, Fla., LB, $116,500, SERVICE STATION, MIAMI, FLA. Orange State Oil Co., 368 N.E. 58 Terrace, Miami, Fla. Bids 10/5. Former bids rejected. CD 10/3, under LB.

Star Constr. Co., 1440 N.W. 21 St., Miami, Fla., CA $175,500, mfg. PLANT at Miami Central Industrial Section, MIAMI, FLA. Gelvan Properties Inc., c/o contractor.

Cravero Constructors, 11295 Biscayne Blvd., Miami, Fla., CA, $325,000, RESIDENTIAL DEVELOPMENT, MIAMI, FLA. Vian Co., c/o contractor.

Richardson Constr. Co., 429 S. 24 St., Birmigham, Ala., LB, $100,000, one bay of aircraft mfg. PLANT addns., alterations, BIRMINGHAM, ALA. Hayes Aircraft Corp., Birmingham, Ala.

Barge-Thompson Co., 136 Ellis St. N.E., Atlanta, Ga. CA, $315,000, dial toll OFFICE BLDG., SELMA, ALA. Southern Bell Telephone Co., Co., Selma, Ala.

▲ **Mississippi Power & Light Co.**, Lampton Bldg., Jackson, Miss., Owner Builds, $20,000,000. Delta Steam Electric Generating PLANT, CLEVELAND, MISS.

Central Constr. Co., Inc., Philadelphia, Miss., LB, $350,000. CHURCH, LOUISVILLE, MISS. First Baptist Church, Louisville, Miss. Bids Oct. 3. CD 9/6.

Hinton Corstr. Co., 539 Central Ave., Laurel, Miss., CA, $329,479, COURT HOUSE, MACON, MISS., Noxubee Co., Court House, Macon, Miss. CD 8/30.

▲ **Switzer Willig Co.**, Trafton Ave., Lexington, Ky., CA, $1,456,100, Contr. A; Harget Constr. Co., 113 Walton Ave., Lexington, Ky., CA, $1,814,421 Contr. B, 397 HOUSING units Proj. Ky 4 and Ky 3, LEXINGTON, KY. Lexington Municipal Housing Comm., 600 Blue Grass Park Dr., Lexington, Ky. Bids Aug. 30, awarded Oct. 6. CD 9/24, under LB.

Southern Housing, c/o Faires & Sanford, archts., Falls Bldg., Memphis, Tenn. Owner Builds. Approx. $850,000. 110 HOMES addn. to Mason Norris subdivision, MEMPHIS, TENN.

Southern Homes, Inc., Vollentine Hills, Memphis, Tenn., CA, $500,000, 50 unit duplex APARTMENTS, 25 two-story brick concrete fdn., bldgs., MEMPHIS, TENN. Herman Gruber & Assoc., 289 Madison Ave., Memphis, Tenn. Eason, Anthony, McKinnie & Cox, Sterick Bldg., Memphis, Tenn., archts. Bids Oct. 4.

J. B. Regen Co., 127 5th Ave. N., Nashville Tenn., CA, $301,506, TB HOSPITAL addn., NASHVILLE, TENN. Davidson Co., Nashville, Tenn. CD 3/1.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
October 30, Wisconsin
STREETS AND ROADS
October 30, Wisconsin

BIDS ASKED—BUILDINGS

▲ **Ill., La Grange**—SCHOOLS—B.A. 10/30—School Dist. 102, 115 Cossit St., Good Man School addn., and Forest Road School addn. $1,000,000. Jos. C. Llewellyn, 38 S. Dearborn St., Chicago, Zone 3, archt. CD 7/25.

▲ **Mich., Lansing**—OFFICE—B.A. 11/7—State, A. N. Langius, dir. State Bldg. Dpt., Lansing, remodeling interior of state bldg., reroofing at 6 stories. $2,921,000. Extended date. Smith, Hinchman & Grylls, 800 Marquette Bldg., Detroit, archts. CD 9/4.

Ill., Chicago—PLANT—Bids Asked—Darling & Co., 4201 S. Ashland St., Chicago, Zone 9, boiler plant addn. $100,000. Stanton & Rockwell, 222 W. Adams St., Zone, 6, archts. CD 12/12/50.

Ill., Chicago—LABORATORY—Bids Asked—Arthur S. Lapine, 121 W. Hubbard St., Zone 10, 30,000 sq. ft. chemical laboratory, 6001 Knox Ave. $275,000. Edward Marks, 30 N. Dearborn St., Chicago, Zone 2, archts.

Ill., Skokie—LABORATORY, etc.—Bids Asked—Offner Electronics Co., 5320 N. Kedzie St., Chicago, Zone 25, 1 story, 24,000 sq. ft. laboratory and office, near Oakton St. and St. Louis Ave., $250,000. Friedman, Alschuler & Sincere, 223 Jackson St., Chicago, Zone 6, archts.

SOON LETS CONTRACT—BUILDINGS

Ill., North Chicago—LABORATORY, etc.—Abbott Laboratories, North Chicago, soon lets contract 3 story, brick, steel laboratory bldg. (RS); 3 story, 25,000 sq. ft. bldg., $300,000. Naess & Murphy, 80 E. Jackson St., Chicago, Zone 4, archts. CD 11/1/49.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **OHIO**—State Hy. Dpt., T. J. Kauer, dir., Columbus, Zone 15.

Harper Supply, Inc., 118 W. Front St., Napoleon, O., CA. $128,635, Type T-33 and concrete, steel structures, S.R. 15, Defiance Co.;

The Red Eagle Corp., 176 Walhalla Rd., Columbus, O., CA, $1,089,203, est. $1,083,000. Type T-35, T-71 and concrete structure, U.S.R. 36, Harrison Co.;

Ruckman-Hansen, Inc., 3617 Leo Rd., Fort Wayne, Ind., CA. $66,096, est. $73,600. Type T-10 and steel, concrete structure, C. R. No. 18, Williams Co.;

The Wm. L. Schloss Paving Co., 3494 Lee Rd., Shaker Heights, O., CA. $139,122, est. $141,000. Type T-35, resurf. Part 1 and 2, S.R. 237, U.S.R. 6, S.R. 17, Cuyahoga Co.;

V. N. Holderman & Sons, Inc., 890 Oakland Park Ave., Columbus, O., CA. $1,541,193, est. $1,726,600. Type

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Ole K. Olsen Co., 823 Perdido St., New Orleans, La.
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Western Steel Prod. Co., 1735 W. 13th Ave., Denver 4, Colo.

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Elkhart, Indiana • Elkton, Maryland

T-71 and steel, concrete structure, Parts 1 and 2, U.S.R. 40, Franklin and Licking Counties. Grand total $2,964,249. Bids Sept. 25. CD 9/13.

▲† **Hughes-Foulkrod Corp.,** 809 Schaff Bldg., Phila., 2, Pa., CA, $3,124,100, constr. tank farm at Wolf Lake Facilities, HAMMOND, IND. General Services Admin., P. Bldg. Service, General Services Bldg., Wash., D. C. Bids Sept. 6, awarded Oct. 5. CD 9/12, under LB.

▲ **Illinois**—State Div. Hys., Springfield.
M. Hoeffken Co. & Hoeffken Bros., Inc., 22 W. "B" St., Belleville, CA, $1,585,576, c. conc. 8.79 mi. on Ill. Route 3, Randolph Co.

S. M. H. Constr. Co., 1500 N. Adams St., Peoria 3, Ill., CA, $711,126, c. conc. 1.69 mi. on Ill. 8, Peoria Co. Bids Sept. 28. CD 10/3, under LB.

▲ **Arcole Midwest Corp.,** 3225 Main St., Evanston, Ill., LB, $2,731,494, railroad relocation, paving, bridge at O'Hare Field, CHICAGO, ILL. City, City Hall, Chicago 2, Ill. Bids 9/25. CD 8/31.

Geo. A. Fuller Co., 111 W. Washington St., Chicago 2, Ill., CA, $300,000, Studio F general interior modification, CHICAGO, ILL. National Broadcasting Co., Merchandise Mart, Chicago 54, Ill. Awarded Oct. 1.

† **Thomas J. Douglas Co.,** 250 W. Wacker Dr., Chicago 6, Ill., LB, $230,000, pump house at O'Hare Air Force Base, CHICAGO, ILL. Dpt. Air Force, Pentagon Bldg., Wash., 25, D. C.

McWane Cast Iron Pipe Co., 1201 Vanderbilt Rd. N., Birmingham, Ala., CA, $105,206, 29,000 ft. 12 in. c.i. pipe, COLUMBIA, ILL. City, Albert C. Metter, Mayor, Columbia, Ill. Bids Oct. 1. CD 9/25.

Hunzinger Constr. Co., 4577 N. 124 St., Milwaukee 13, Wis., CA, $312,000, 1017 ft. high, steel television tower, concrete fdn. MILWAUKEE, WIS. WTMJ-TV, 720 E. Capitol Dr., Milwaukee 12, Wis. Chas. S. Whitney, 720 E. Mason St., Milwaukee, Wis., engr.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Wm. Cafaro & Assoc.,** c/o former contractor B & B Constr. Co., 641 Himrod Ave., Youngstown, O., will not construct SHOPPING CENTER on Robbins Ave., Ext., east of Niles city limits, NILES, O. est. $1,000 000. Project abandoned. CD 9/26, under CA.

▲ **Larchmont Gardens, Inc.,** c/o Porter W. McDonnell, engr., Commerce Bldg., Toledo, O. Owner Builds. Approx. $4,000,000. HOUSING, 500-unit garden type of 31 two-story brick, masonry back-up bid in Washington Twp., TOLEDO, O. Charles C. Colman, 1836 Euclid St., Cleveland, O., archt.

▲ **H. K. Ferguson Co.,** 19 Rector St., New York 6, N. Y. CA. Approx. $1,000,000. PLANT mfg. precision gears for aircraft, VAN WERT, O. Sterling Electric Motors, Inc., 385 Gerard Ave., New York 51, N. Y.

▲ **Speedways Home, Inc.,** 614 State Life Bldg., Indianapolis 6, Ind. Owner Builds, $1,300,000, 100 HOMES, High School Rd, and vicinity. INDIANAPOLIS, IND.

▲ **Superior Constr. Co.,** 1800 E. 7 St., Gary, Ind., LB, $1,000,000. roller bearing FACTORY, VALPARAISO, IND. McGill Mfg. Co. Valparaiso, Ind. Bids Oct. 4. CD 9/28.

Hellrung Constr. Co., 101 Cherry St., Alton, Ill., LB $314,940, general contract, Bethalto Community Unit High SCHOOL addns., BETHALTO, ILL. Bd. Educ., School Dist. 8, of Madison Co., Bethalto, Ill. Bids Sept. 25. CD 9/12.

C. W. Haynes Co., 135 S. La Salle St., Chicago 3, Ill., CA, $125,000, printing PLANT modification, CHICAGO, ILL. Gunthorp-Warren Printing Co., 210 W. Jackson St., Chicago 6, Ill. Everett F. Quinn, 134 N. La Salle St., Chicago 2, Ill., archt. Awarded Oct. 1.

Sumner Sollitt Co., 307 N. Michigan Ave., Chicago 1, Ill., CA, $155,000, FACTORY modifications and addns. 111 and Cottage Grove Ave., CHICAGO, ILL. Pullman-Standard Car Mfg. Co., 69 E. Adams St., Chicago 3, Ill. Frederick Stanton, 307 N. Michigan Ave. Chicago 1, archts. Awarded 10/1.

Ryan Constr. Co., 2606 Taylor St., Omaha, Neb., CA $265,000, GRAIN ELEVATOR, CHICAGO ILL. East St. Louis Grain Elevator, 9231 S. Harbor St., Chicago 17, Ill. F. R. Lawrence, 677 N. 58 St., Omaha, Neb., engr. Awarded Sept. 17.

Hecht & Larson, 221 N. La Salle St., Chicago 1, Ill., CA, $82,000, FACTORY 3740 Belmont Ave., CHICAGO, ILL. Campbell Equipment Co., 2122 N. Menard St., Chicago 39, Ill. Bertram Weber, 221 N. La Salle St., Chicago 1, Ill., archt. Awarded Oct. 1.

Illinois Constr. Co., 5608 Blackstone St., Chicago 37, Ill. CA, $150,000, CAR SHOP in coach yard, CHICAGO, ILL. Chicago, Milwaukee & St. Paul R. R., 516 W. Jackson St., Chicago 6, Ill. Awarded Sept. 24. CD 9/5.

O. & O. Constr. Co., 20 Green Bay Rd., Winnetka, Ill., CA $180 000, 30,000 sq. ft. FACTORY addn., DEERFIELD, ILL. Klein Schmidt Laboratories, Inc., Deerfield, Ill. James Schnur, 20 Green Bay Rd., Winnetka, Ill., archt. Awarded Sept. 19.

Continental Constr. Co., 340 N. Central St., Chicago 44, Ill. CA, $150,000, 20,000 sq. ft. FACTORY, FRANKLIN PARK, ILL. Corlett Turner Co., 1001 S. Kostner St., Chicago 24, Ill. F. W. Langhenrich, 4551 W. Washington St., Chicago 4, Ill., archt. Awarded Sept. 26.

F. Kutschenreuter, 613 N. 119 St., Milwaukee 13, Wis., CA, $300,000, POWER HOUSE addn., MILWAUKEE, WIS. American Hair & Felt Co., 944 N. 46 St., Milwaukee 13, Wis. Gates, Moe, Weiss & Papenthein, 611 N. Broadway, Milwaukee 2, Wis., engrs. and archts.

Albert D. Thomas, Inc., 22605 Rosedale St., Detroit, Mich. CA. Approx. $700,000. 67 HOUSES, Rosedale St. east side, DETROIT, MICH. Fred R. Biederman (Agent) 20390 Harper St., Gratiot, Mich.

Vickers, Inc., 1400 Oakman Blvd., Detroit, Mich., Owner Builds. Approx. $180,000. 1 story, brick, steel FACTORY addn., Oakman Blvd., DETROIT, MICH.

De Mare Bros., 6345 Lyndon St., Detroit, Mich., CA. Approx. $300,000. Brick, masonry SCHOOL, East Pleasant and Le Roy Aves., RIVER ROUGE, MICH. City Bd. Educ., River Rouge, Mich. Bids Aug. 23. CD 8/2.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

October 31, Kansas

STREETS AND ROADS

October 31, Kansas

Minn., Columbia Heights — B.A. 10/23 — City, Leroy Trafton, mgr., con. standpipe type water tower of not less than 500,000 gal. capacity. $45,000. Bids Aug. 28 rejected L. B. $50,100. CD 9/5, under LB.

Ia., Montour—B.A. 10/30—City, elevated steel water tank on tower, water mains and hydrants, $40,000.

† **Oklahoma**—B.A. 10/30—U. S. Eng., Box 61, Tulsa, Zone 2, raw and treated water lines at Fort Gibson Dam, Muskogee Co. Approx $100,000.

† **Tex., Amarillo** — APRON EXTENS. — B.A. 10/30 — U. S. Eng., Box 61, Tulsa 2, Okla., apron extens. at Amarillo Air Force Base, Inv. No. Eng 34-066-52-14. $375,000. CD 10/3.

† **N. M., Albuquerque**—STEAM MAINS, etc.—B.A. About 10/31—U. S. Eng., Box 1538, 2134 E. Central Ave., addnl. steam mains and irrigation sys. Outlets (RUG 51-1) and (RUG 51-2), Serial No. 29-005-52-14.

BIDS ASKED—BUILDINGS

Tex., Houston—FREIGHT TERMINAL—Bids Asked—Central Freight Lines, Inc., 1200 Walnut St., masonry, concrete freight terminal, incl. 80x250 ft. dock, 4100 blk. Fulton St. $400,000. CD 12/1/50.

SOON LETS CONTRACT—BUILDINGS

Tex., Sinton—OFFICE—Plymouth Oil Co., Sinton, soon lets contract 2 story bsmt. office. $300,000. E. Dexter Hamon, 912 Ocean Dr., Corpus Christi, archt. George R. Rhine, 209 San Pedro Ave., and Frank T. Drought, 117 W. Pecan St., San Antonio, engrs. CD 7/18.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Missouri Valley Constr. Co., 409 B T Bldg., Des Moines, Ia., CA, $88,120, road surfacing, COUNCIL BLUFFS, IA., Pottawattamie Co., Council Bluffs, Ia. P. J. Mahoney, co. engr. Bids Oct. 1. CD 12/15/44.

City, Garnavillo, cancelled bids to have been opened July 20, sewage plant and 22,000 ft. sewers, manholes, etc., GARNAVILLO, IA. Bidding postponed indefinitely. CD 7/3.

† **Paul E. Crawley**, Richmond, Mo., LB. $213,205, emergency levee repairs to both banks, Missouri River from St. Albans bend (Mile 50) to 5 mi. above mouth, 42 Mi. to be completed in 150 days, 556,000 cu. yd. earthwork, MISSOURI. U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Bids Oct. 2. CD 9/26.

† **SOUTH DAKOTA**—Bureau P. Rds. Dpt. Commerce, Bldg. 22, Denver Federal Center, Denver, Colo.

rejected bids Sept. 19, D1, clearing, grubbing, excavation, etc., 1.695 mi. Forest Hy. Proj. 1-A3, Deadwood-Custer-Hot Springs, Lawrence and Pennington Counties, LB. $153,071. CD 9/6.

R. W. Hughes & Co., Sunderland Bldg., Omaha, Neb., CA. $229,426, muncipal electrical sys. extens., HOLDREGE, NEB. City, Holdrege, Neb. CD 7/7.

OKLAHOMA—State Hy. Dpt., Capitol, Oklahoma City, Zone 5.

Oklahoma Paving Co., 4401 N. Portland St., Oklahoma City 7, Okla., CA. $143,100, est. $140,781. 560 ft. steel bridge at Spavinaw Creek on U. S. 59, at Jay, Delaware Co.;

Brooks & Dahlgren, Insurance Bldg, Oklahoma City 2, Okla. CA $101,489, est. $100,000, 5 concrete bridges U. S. 81 north of Comanche. Bids Oct. 2. CD 9/25.

Texas-New Mexico Pipe Line Co., 720 San Jacinto St., Houston, Tex. Own Forces. $690,000. 76 mi. 8 in. crude oil pipe line, Midland to Scarborough, Crane, TEXAS. CD 9/28.

TEXAS—State Hy. Comn., Austin,

Austin Bridge Co. & Austin Road Co., P.O. Box 1590, Dallas, Tex., LB. $931,963, T. & N. O. and Belt Line Ry. overpass and approaches on Hy. U.S. 75, Proj. UGI 832 (9) and (10), Dallas Co. Bids Oct. 9. CD 9/18.

Harris County Fresh Water Dist. 8, Baytown, Tex., Own Forces. $55,000. water line extens., some sys. rehabilitation, BAYTOWN, TEX. Harris County Fresh Water Dist. 8, Baytown, Tex. Frank J. Metyko, Scanlon Bldg., Houston, Tex., engr. CD 10/11/49.

Harris County Fresh Water Dist. 8, Baytown, Tex., Own Forces. $70,000. sanitary sewer lines, some sys. rehabilitation, BAYTOWN, TEX. Frank J. Metyko, Scanlon Bldg., Houston, Tex., engr.

Brazos Co., Bryan, Tex., Own Forces. $90,000. road repairing and drainage, BRYAN, TEX.

Comanche Co., Court House, Comanche, Tex., Own Forces. $62,500. Road repairing, imprvs., drainage 3 mi. new road, COMMANCHE, TEX.

Dallas Co., Court House, Dallas, Tex. Force Account. Approx. $75,000, Precinct 1, general road imprv., incl. seal coat; $80,000, Precinct 3, general road iomprv. incl. seal coat, DALLAS, TEX. Jack Davis, county engr. CD 2/27/50.

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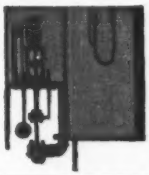

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City, Gladewater, Tex., Force Account. $38,500. Addnl. exten. water lines, GLADEWATER, TEX. Joe E. Ward, Nacol Bldg., Wichita Falls, Tex., engr. CD 4/5.

City, Gladewater, Tex., Force Account. Approx. $65,000 addnl. exten. sanitary sewer lines, GLADEWATER, TEX. Joe E. Ward, Nacol Bldg., Wichita Falls, Tex.

Brown & Root, Inc., Box 3, Houston, Tex., CA, $878,938. Access roads to Washburn Tunnel, HOUSTON, TEX. Harris Co., Court House, Houston, Tex. Bids Oct. 1, awarded Oct. 6. CD 10/10, under LB.

City, Irving, Tex., Own Forces. Approx. $460,000. street imprvs., mostly surf., IRVING, TEX.

E. B. Darby, Box 467, Pharr, Tex., LB $105,122, est. $150,000. airport imprvs., Proj. No. 9-41-053-102, MCALLEN, TEX.; City, McAllen, Tex., Bids Oct. 4. CD 927.

† **Dodds & Wedegartner**, Harlingen, Tex. CA. Approx. $115,000. boat basin, PORT ISABEL, TEX. U. S. Coast Guard, c/o J. E. Sherwood, Commander, Coast Guard Station, Port Isabel, Tex. CD 9/12, under Unclassified.

Southwestern Bell Telephone Co., Auditorium Circle, San Antonio, Tex., Force Account $175,000 unit of underground cable lines, SAN ANTONIO, TEX. CD 10/25/50.

Guadalupe Co., Seguin, Tex., Own Forces. Approx. $124,995, 15 mi. road constr. and imprvs., SEGUIN TEX. CD 8/28/47.

Milam Co., Court House, Cameron, Tex., Force Account. $78,000. asph. paved 9 mi. road from Thorndale to Aluminum Plant site, at THORNDALE, TEX.

Collingworth Co., Wellington, Tex., Own Forces. Approx. $71,000. General road repairing, some surf., WELLINGTON, TEX.

† **MONTANA**—Bureau P. Rds., 342 Post Office Bldg., Missoula.

Union Constr. Co., Missoula, Mont., CA. $183,332. clearing, grubbing, grading, draining 3.339 mi. Swan River Hy. Proj. 15-A1, D, Unit 2, Lake Co. Bids Oct. 2. CD 9/24.

† **Birch, McLaughlin & Lane**, Ford Bldg., Great Falls, Mont., CA. $748,463, est. $700,368, aircraft refueling sys. and addns. to bulk fuel storage at Air Force Base, ENG 45-164-52-7, GREAT FALLS, MONT. U. S. Eng., Bldg. 602, City-County Airport, Walla Walla, Wash. Bids Sept. 26, awarded Oct. 1. CD 10/3, under LB.

COLORADO—State Hy. Dpt., 518 State Office Bldg., Denver.

J. B. Kenny, 3233, Osage St., Denver, Colo., LB, $160,653, est. $129,171. asph. 1.125 mi. State Hy. 8 in Aurora East from city limits of Denver, F 005-4 (2) Adams and Arapahoe Counties.

Brown Constr. Co., 1530 E. Abriendo St., Pueblo, Colo., LB, $194,416, est. $175,880, stabilization, surf, structure 6.465 mi. State Hy. 13 between Rio Blanco and Rifle, Garfield Co.

San Ore Constr. Co., McPherson, Kan., LB, $103,741, est. $93,211, stabilization, structures and road mix. oil processed surf. 5.4 mi. State Hy. 51 beginning at south city limits of Burlington, S 0001 (9), Kit Carson Co.

Colorado Constructors, Inc., 925 W. 39 Ave., Denver, Colo., LB, $91,835, est. $79,047, stabilization, structures and oil processed surf. 4.226 mi. S 0024 (6), Logan Co. Bids Sept. 28. CD 9/21.

BUILDINGS

LOW BIDS AND CONTRACTS

Baumeister Constr. Co., Hamm Bldg., St. Paul, Minn., CA. $200,000. 1 story, 200x300 ft., concrete block WAREHOUSE, ST. PAUL, MINN. Webb Publishing Co., 50 W. Kellogg Blvd., St. Paul, Minn.

Lovering Constr. Co., 616 Guardian Bldg., St. Paul, Minn. CA $275,000. general constr. 1 story 261x401 ft. WAREHOUSE., 1921 Case Ave., ST. PAUL, MINN. Terminal Properties Corp., 425 Eighth St., St. Paul, Minn.

Lovering Constr. Co., 616 Guardian Bldg., St. Paul, Minn., CA. $300,000. general constr. 1 story 281x420 ft., WAREHOUSE-OFFICE, 429 N. Prior Ave., ST. PAUL, MINN. Terminal Properties Corp., 425 Eighth St., St. Paul, Minn.

Henry Schaefer Co., 1326 W. 3 St., Davenport, Ia., CA $35,000, flour packing PLANT, DAVENPORT, IA. International Milling Co., 803 E. River St., Davenport, Ia.

▲ **J. E. Dunn Constr. Co.**, 929 Holmes St., Kansas City 6, Mo., Owner Builds. Approx. $1,000,000. Two 10 story APARTMENTS, and parking facilities, 46 and Jefferson Sts., KANSAS CITY, MO.

Howard W. Swan, 1002 Walnut St., Kansas City 6, Mo., CA. Approx. $400,000. Two, 2 story 58 unit APARTMENT, 12 and Hardesty Sts., Vicksburg and Concord Courts, KANSAS CITY, MO. Carl B. Rechner & Assoc., 1002 Walnut St., Kansas City 6, Mo., Herbert E. Duncan, Victor Bldg., Kansas City 6, Mo., archt.

John Hill Constr. Co., Syndicate Trust Bldg., 917 Olive St., St. Louis 1, Mo., CA. Approx. $175,000. 1 story, 147x179 ft. and 43x46 ft., brick, concrete, steel PARTS and DISPLAY Bldg. Broadway and Dock St., ST. LOUIS, MO. Radal Southern Corp., 1101 S. Akard St., Dallas, Tex. and International Harvester Co., 180 N. Michigan Ave., Chicago, Ill. George L. Dahl, 2101 N. St. Paul St., Dallas, Tex., archt. CD 4/17/44.

George Moeller Constr. Co., 3007 Wyoming St., St. Louis 18, Mo., LB. $345,678, 1 and 2 story, brick, rein.-con. Delcrest SCHOOL in Del Crest sub-division on Del Crest Dr., UNIVERSITY CITY (St. Louis 5, P.O.) MO. School Dist., Julius E. Warren, supt. Schools, 6701 Delmar Blvd., University City 5, Mo. Bids Oct. 4. CD 9/21.

Chemical Plants Div. of Blaw-Knox Constr. Co., Cushing, Okla., CA. Approx. $785,000. Package PLANT for motor oils and greases, CUSHING, OKLA., Deep Rock Oil Corp., Cushing, Okla. CD 10/4.

Johnson-Sampson Co., Salina, Kan., CA. $250,000. 200,000 bu. GRAIN STORAGE ELEVATOR and BINS, OKLAHOMA CITY, OKLA., Superior Feed Mills Co., 2100 S. Robinson St., Oklahoma City, Okla., Awarded Oct. 1. CD 4/26.

R. H. Dobbins Co., 801 S. W. 31 St., Oklahoma City 4, Okla., CA. $200,000. 100x200 ft. WAREHOUSE. 42 and Cooper Sts., OKLAHOMA CITY, OKLA. Oklahoma Industries, Inc., First Natl. Bldg., Oklahoma City, Okla. Jack Hull, Skirvin Tower Bldg., Oklahoma City, Okla., engr. Awarded Oct. 2.

R. H. Dobbins Co., 801 S. W. 3 St., Oklahoma City 4, Okla. CA.$150,000. WAREHOUSE, 44 and Cooper Sts., OKLAHOMA CITY, OKLA. Dulaney's Inc., 810 N. W. 2 St., Oklahoma City 3, Okla. Bailey & Bozalis, Colcord Bldg., Oklahoma City, Okla., archts. Awarded Sept. 28.

Lippert Bros., 2800 N. Santa Fe St., Oklahoma City 5, Okla., CA. $750,000. Grocery WAREHOUSE. N. E. 34 and Geary Sts., OKLAHOMA CITY, OKLA. Safeway Stores, Inc., 4 and Jackson Sts., Oakland, Calif. Parr & Aderhold, Hales Bldg., Oklahoma City, Okla., archts. Awarded 9/26.

Fisher Constr. Co., Box 6127, Houston, Tex., LB. $437,200. 3 story, 38,500 sq. ft., concrete, masonry ENGINEERING BLDG., one freight elevator, etc., COLLEGE STATION, TEX. Agricultural & Mechanical College of Texas, College Station, Tex. Bids Sept. 27. CD 9/4.

Macdonald Engineering Co., 188 W. Randolph St., Chicago, Ill., CA. $387,290, TERMINAL GRAIN ELEVATOR, CORPUS CHRISTI, TEX. Nueces County Navigation Dist. 1, Port of Corpus Christi, Guggenheim Cohn Bldg., Corpus Christi, Tex.

First Baptist Church Congregation, Gainesville, Tex. Owner Builds. Approx. $300,000. masonry CHURCH AUDITORIUM, and Sunday School annex, 1,000 seating capacity, GAINESVILLE, TEX. CD 4/2/51.

Ralph M. Parsons Co., 617 S. Olive St., Los Angeles, Calif., CA. Approx. $750,000. design and construct Elementary Sulphur PLANT, at Deer Park, HOUSTON, TEX. Shell Chemical Corp., Shell Bldg., Houston, Tex. Awarded Oct. 5. CD 9/21.

O'Rourke Constr. Co., 4011 Koehler St., Houston, Tex., CA. Approx. $265,000. 1 story, 60,000 sq. ft. masonry, concrete WAREHOUSE, 306 S. 66 St., HOUSTON, TEX. Carpenter Paper Co., 1121 Rothwell St., Houston, Tex.

El Paso Natural Gas Co., Bassett Tower, El Paso, Tex., will not construct 1100 hp. COMPRESSOR STATION, SEMINOLE, TEX. Project abandoned. CA $291,000. CD 9/27, under CA.

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FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
October 31, California

California—PARK IMPRVS.—B.A. 10/25—State Div. Hys., 120 S. Spring St., Los Angeles, retaining wall, surface parking areas in Will Rogers State Park near Chautauqua Blvd. Intersection, Los Angeles.

† **Washington**—B.A. 10/25—Bureau Reclamation, Dpt. Interior, Ephrata, altering pump discharge pipes, Grand Coulee Pumping Plant, near Grand Coulee Pumping Plant, 30 mi. north and east of Odair, Spec. DC-3557; adv.

† **Wash., Port Angeles**—LODGE—B.A. 10/25—National Park Service, Port Angeles, completion of Hurricane Ridge lodge in Olympic National Park, $150,000.

† **Wash., Spokane**—TAXIWAY—B.A. 10/26—U. S. Eng., Bld. 602, City-County Airport, Walla Walla, Wash., taxiway extension at Geiger Air Force Base, Inv. 45-164-52-6. Extended date. CD 9/6.

▲ **Calif., Los Angeles**—B.A. 10/29—Los Angeles Dpt. Water & Power, 207 S. Broadway, constr. Eagle Rock Reservoir, $2,000,000. Plans deposit $50. S. B. Morris, ch. engr. CD 1/15/45.

† **Arizona**—B.A. 10/30—Bureau Reclamation, Dpt. Interior, Davis Dam, Ariz., installing metalwork, heating and ventilating systems and pipiing, for Davis Dam and Power Plant on Colorado River and approx. 30 mi. west of Kingman, Spec. DC-3560.

† **California** — SWITCHBOARDS, etc. — B.A. 10/30—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Exeter, Calif. motor-control switchboards and distr. switchboards for Pumping Plants E1 and E2, Exeter Irrigation District, Central Valley Proj., Spec. DS-3548. L. N. McClellan, ch. engr.

Calif., Columbia—B.A. 10/30—State Div. Architecture, P. Wks. Bldg., Sacramento, sewage treatment project at Columbia State Park. Plans deposit $25.

Calif., Los Angeles—B.A. 10/30—Bd. Supervs., Los Angeles Co. Hall of Records, sanitary sewers in Baldwin Ave., Cl 1321, Temple City, $88,500. Extended date. C. E. Arnold, co. engr. and surv. CD 9/19.

Calif., Santa Rosa—B.A. 10/30—State Div. Architecture, P. Wks. Bldg., Sacramento, sewage and water project for Los Guilucos School for Girls, near here. Plans deposit $25.

Calif., Santa Rosa — DISTRIBUTION SYSTEM — B.A. 10/30—State Div. Architecture, P. Wks. Bldg., Sacramento, electrical distr. system permanent facilities at Los Guilucos School for Girls.

† **Oregon**—B.A. 10/30—U. S. Eng., Bldg. 602, City-County Airport, Walla Walla, Wash., hydraulic units for intake gates, McNary Dam Powerhouse, CIVENG 45-164-52-28.

† **Wash., Fort Lewis**—B.A. 10/30—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, clearing, grubbing grading, permanent troop facilities, ENG 45-108-52-58.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **J. A. Park**, Box 502, Yakima, Wash., CA, **$135,075**, est. $132,108, pumping plants, Columbia River, near Pasco, CIVENG 45-165-52-11, Franklin Co., WASHINGTON. U. S. Eng., City-County Airport, Walla Walla, Wash. Bids Oct. 3. CD 8/28.

† **Long Constr. Co.**, Billings, Mont., LB, **$477,440**, est. $461,716, Schedule 2, constr. lateral W35.9 lateral structures, precast-concrete pump discharge lines, relocation county road, Columbia Basin Proj., Spec. DC-3514, WASHINGTON. Bureau Reclamation, Dpt. Interior, Ephrata, Wash. Bids Sept. 19. CD 8/10.

▲† **Peter Kiewit Sons Co.**, Longview, Wash., CA, **$1,467,865**, est. $2,056,012, levees on left bank of Columbia River, Pasco, WASHINGTON. U. S. Eng., Bldg. 602, City-County Airport, Walla Walla, Wash. Bids Sept. 13, awarded Sept. 29. CD 9/18, under LB.

† **G. J. Bouten Constr. Co.**, N. 216 Division St., Spokane, Wash. CA, **$498,000**, alert hangar, utilities, alert apron and taxiway at Geiger Air Force Base, SPOKANE, WASH. U. S. Eng., Bldg. 602, City-County Airport, Walla Walla, Wash. Bids June 26 rejected. CD 7/5, under LB.

▲† **Phil McInnis and Henry George & Sons**, Hutton Bldg., Spokane, Wash., CA, **$2,500,000**, troop housing and misc. buildings and utilities, Fairchild Air Force Base, SPOKANE, WASH. U. S. Eng., Bldg. 602, City-County Airport, Walla Walla, Wash. CD 9/18.

Foothills Constr. Co., Lake Grove, Ore., LB, **$129,001**, enlarge water reservoir, OREGON CITY, ORE. City, City Hall, Oregon City, Ore. Bids Oct. 2. CD 9/21.

California—State Div. Hys., P. Wks. Bldg., Sacramento, rejected bids Sept. 19, remove superstructure, building new superstructure, other work to bridge across south fork of Trinity River, 22 mi. west of Hayfork Trinity Co., LB **$79,879**. CD 9/28, under LB.

CALIFORNIA—State Div. Hys., 120 S. Spring St., Los Angeles.

E. L. Yeager Co., Box 87, Riverside, Calif., CA, **$729,505** grading, surf. 10.5 mi. between Antelope Road and Rt. 64, Riverside Co. Bids Sept. 13, awarded Oct. 1. CD 9/19, under LB.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles.

Oberg Bros. Constr. Co., Box 640, Inglewood, Calif., LB **$1,160,099**, 6 bridges, grading paving, Harbor Freeway 7, 8 and 9 Sts., Los Angeles Co. Bids Oct. 4. CD 9/11.

W. M. Lyles Co., P. O. Box 495, Avenal, Calif., LB, **$208,901** sewer and water systems at Fresno State College, FRESNO, CALIF. State Div. Architecture, P. Wks. Bldg., Sacramento, Calif.

Santa Barbara College, University of California, Goleta, Calif., rejected bids Sept. 11, Outfall Sewer No. 1 and 2, revise mains, GOLETA, CALIF. LB, **$198,096**. CD 9/19, under LB.

Garnier Constr. Co., 1250 Maple Grove St., Puente, Calif., LB, **$300,437**, water mains, house services, etc. reservoir, etc. Improvement Distr. 2, LAGUNA BEACH, CALIF. Bd. Directors Laguna Beach County Water Dist., Puente, Calif. Bids Oct. 2. CD 9/19.

▲† **Carl N. Swenson Co., Inc.**, 1095 Stockton Ave., San Jose, Calif., CA, **$1,033,781** foundations for 8 ft. supersonic wind tunnel Spec. A-6750, MOFFETT FIELD, CALIF. National Advisory Com. for Aeronautics, Ames Laboratory, Moffet Field, Calif. Bids Sept. 25, awarded Oct. 2. CD 10/5, under LB.

Elmer J. Freethy, 1432 Kearney St., El Cerrito, Calif., CA **$520,273**, pretreatment works addns. San Pablo Filter Plant, near El Cerrito, OAKLAND, CALIF. East Bay Municipal Utility Dist., 512 16 St., Oakland, Calif. Bids Sept. 14, awarded Oct. 2. CD 9/24, under LB.

Erickson, Phillips & Weisberg, 7341 Telegraph Ave., Oakland, Calif., LB, **$71,337**, Alt. 1 excavating, grading access road, Cordelia Reservoir, VALLEJO, CALIF. City, City Hall, Vallejo, Calif. Bids Oct. 1.

BUILDINGS

LOW BIDS AND CONTRACTS

N. W. White, Pier 65, Seattle, Wash., CA, **$472,688**, est. $450,000, 3 story, 100x147 ft., rein.-con. refrigerated FISH STORAGE WAREHOUSE, SEATTLE, WASH. Port of Seattle, Bell St. Terminal, Seattle 1, Wash. Bids Oct. 4. CD 9/24.

Pacific Co. Hospital Dist., South Bend, Wash., rejected bids Sept. 18, HOSPITAL, SOUTH BEND, WASH. Will re-advertise. CD 9/24, under LB.

L. C. Nelson & Son, 3015 North McCall St., Selma, Calif., LB, **$352,217**, Lincoln School and Washington School addn., KINGSBURG, CALIF., Kingsburg Joint Union School Dist., Ellis and Smith Sts., Kingsburg, Calif. Bids Sept. 26.

Brewer-Webb Constr. Co., 913 E. Wardlow Rd., Long Beach, Calif., CA, **$140,000**, MAINTENANCE SHOP BLDGS. B, C, E and F, LONG BEACH, CALIF. Long Beach Bd. Educ., 715 Locust St., Long Beach, Calif. Bids Sept. 28. CD 9/21.

▲ **Riley-Stoker Corp.**, 510 W. 6 St., Los Angeles, Calif., LB, **$1,031,625**, furnishing, deli., erecting STEAM GENERATOR and appurtenances for lighting department under L.D. 51-8, PASADENA, CALIF. City, City Hall, Pasadena, Calif. Bids Sept. 20. CD 8/23.

Cory & Longworth, Inc., 1957 5 Ave., San Diego, Calif., CA $560,046, general constr Training SCHOOL, San Diego State College, SAN DIEGO, CALIF. State Div. Architecture, P. Wks. Bldg., Sacramento, Calif. Bids Sept. 18, awarded Oct. 5. CD 9/27, under LB.

Indenco, 960 98 Ave., Oakland, Calif., LB, **$426,845**, Lewelling SCHOOL, SAN LORENZO, CALIF. San Lorenzo Elementary School Dist., 2 and Sycamore Sts., San Lorenzo, Calif. Bids Sept. 26.

ALASKA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **U. S. Eng.**, (APO 942, c/o PM, Seattle, Wash.) Anchorage, Alaska, rejected bids May 22, battalion headquarters bldg. at Ladd and Eielson Air Force Bases, Inv. 51-111, ALASKA. L. B. **$775,000**. CD 5/29, under LB.

▲† **S. Birch & Sons, C. F. Lytle Co. and Green Constr. Co.**, Anchorage, Alaska, CA, **$1,068,870**, bit. surf. Seward-Anchorage Hy., Girdwood to Anchorage, ALASKA. Alaska Road Comn., Juneau, Alaska. Bids Sept. 18. CD 9/25, under LB.

† **M. P. Butler**, 3419 13 Ave. S.W., Seattle, Wash., CA, **$597,800**, diversion dam, cooling pond and roadway for heating and power plant, ANCHORAGE, ALASKA. The Alaska Railroad, Dpt. Interior, Anchorage, Alaska. Bids Aug. 30. CD 9/6, under LB.

† **Alaska P. Wks., Dpt. Interior**, Juneau, Alaska, rejected bids Sept. 6, coal-handling facilities, FAIRBANKS, ALASKA. L. B. **$524,500**, est. $180,000. CD 9/11, under LB.

† **U. S. Eng., (APO 942, c/o PM, Seattle, Wash.)** Anchorage, Alaska, rejected bids July 11, ammunition loading dock and underground magazines, Inv. No. S95-507-51-61, FORT RICHARDSON, ALASKA. L. B. **$564,113**. CD 7/18, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **J. B. Warrack Co.**, Securities Bldg., Seattle 1, Wash. LB **$1,131,000**. 92x740 ft., steel CAR and COACH SHOP, ANCHORAGE, ALASKA. The Alaska R. R., Dpt. Interior, Anchorage, Alaska. Bids Oct. 4.

U. S. POSSESSIONS

SOON LETS CONTRACT—BUILDINGS

Puerto Rico, Aguadilla—HOUSING—U. S. Eng., 575 Riverside Ave., Jacksonville, Fla., soon lets contract, construct, manage, finance, 575 Wherry Act housing units at Ramey Air Force Base. CD 12/6/50.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

Que., Chandler—WHARF—C.A. 10/24—Secy. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., wharf reconstruction Approx. $106,000. Plans deposit $25. R. Blais, c/o owner, engr.

Que., Lauzon—B.A. 10/24—Secy. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., dredging Lorne Dry Dock, Approx. $100,000. R. Blais, c/o owner, engr.

BIDS ASKED—BUILDINGS

▲ **N. B., St. Stephen**—HOSPITAL UNIT—B. A. 10/22—Bd. Trustees of Charlotte County Hospital, St. Stephen, superstructure 5 story, T-shaped, 44x176 ft., and 44x76 ft. wing concrete, brick hospital unit, $1,000,000. Plans deposit $50. Govan, Ferguson, Lindsay, Kasminker, Maw, Langley & Keenleyside, 515 Jaris St., Toronto, Ont., archts. CD 7/27/50.

B. C., Fort Nelson—POWER PLANT—B. A. 10/23—D. W. Laird, engr., 400 Kensington Bldg., Winnipeg, Man., diesel power plant. for Govt. of Canada, Defence Constr. Ltd., 70 Lyon St., Ottawa, Ont.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Nelson River Constr. Ltd.**, Dawson Rd., St. Boniface, Man., CA, **$1,500,000**, aerodrome development, MACDONALD, MAN. Govt. of Canada Hunter Bldg., Ottawa, Ont.

W. C. Brennan Paving Co., 400 Gage Ave. N., Hamilton, Ont. CA, Approx. **$200,000**, grading, paving parking area and storage compound area "P3" at Army Camp, CAMP BORDEN, ONT. Defence Contr. Ltd., 441 Queens Quay W., Toronto, 2B, Ont. Bids Aug. 28. CD 8/28.

Swansea Constr. Co. Ltd., 363 Rogers Rd., Toronto, Ont., CA, **$247,000**, 10 mi. c.i. water pipe and rate of flow control chamber at air base, CENTRALIA, ONT. Defence Constr. Ltd., 441 Queens' Quay W., Toronto, Ont. Bids Sept. 5, awarded Oct. 3. CD 8/28.

▲ **Hill-Clark-Francis Ltd.**, New Liscard, Ont., CA, Approx. **$1,425,000**, 173 houses at Rockcliffe Airport for R.C.A.F. Station, OTTAWA, ONT. Defense Constr. Ltd., 441 Queens Quay W., Toronto, Ont. S. M. Connelly, c/o owner, engr.

W. H. Yates Constr. Co. Ltd., 400 Wellington St. N., Hamilton, Ont., CA, **$200,000** water, electrical, steam and sewer distr. system for Defence Research Bd., SHIRLEY BAY, ONT. Defence Constr. Ltd., 441 Queen's Quay W., Toronto, Ont. Bids Sept. 11, awarded Oct. 4. CD 8/30.

W. S. Fullerton Const. Co. Ltd., 943 Central Ave., Windsor, Ont., CA, **$212,637**, permanent paving various streets, WINDSOR, ONT. Municipality, Windsor, Ont. CD 3/12.

PRINCE EDWARD ISLAND—Province of P.E.I., Charlottetown

Warren Paving Co. Ltd., Newperth, P.E.I., CA. Approx. **$100,000**, gravel roads, Georgetown to Newperth. CD 4/18/47.

J. P. Cartier Ltd., 429 W. Jean Talon St., Montreal, Que., CA $189,897 cold storage chambers addns., imprv. electrical and heating systems, MONTREAL, QUE. Municipality, Montreal, Que. D. Beaupre, 811 Berri St., Montreal, Que., archt.

North Shore Constr. Co. Ltd., 1410 Stanley St., Montreal, Que., CA, Approx. **$260,000**, two concrete paved aircraft parking areas and passing taxi strip at Aerodrome, SAGUENY, QUE. Dpt. Transport, Ottawa, Ont. Bids Sept. 6. CD 8/28.

Provincial Constr. Co. Ltd., Jonquiere, Que., CA, **$110,000** paving various streets, JONQUIÈRE, QUE. Municipality, Jonquiere, Que. CD 12/28/49

Claydon Co., Ltd., 290 Garry St., Winnipeg, Man., CA **$67,000**, water mains, NIPAWIN, SASK., Municipality, Nipawin, Sask.

BUILDINGS

LOW BIDS AND CONTRACTS

Dinsmore Constr. Co. Ltd., McDougall St., Windsor, Ont., CA, Approx. **$288,742**, ENTOMOLOGICAL LABORATORY, CHATHAM, ONT. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids Oct 3. CD 9/13.

T. A. André & Sons Ltd., 580 Brock St., Kingston, Ont., CA, **$300,000**, OFFICERS MESS addns., alterations, at Fort Frontenac, KINGSTON, ONT. Defence Construction (1951) Ltd., 441 Queen's Quay W., Toronto, Ont. S. M. Connolly, c/o owner regional engr. Awarded Oct. 4.

Patterson Contr. Co., 379 Catherine St., Ottawa, Ont., CA, Approx. **$180,000**, 1 story, brick, concrete blocks STORE and OFFICE, Kent St. and Laurier Ave. W., OTTAWA, ONT. Canadian Tire Corp., 837 Yonge St., Toronto, Ont. CD 1/26.

Cecil Carpenter & Co. Ltd., 5139 Decarie Blvd., Montreal, Que., CA, **$400,000**, FACTORY, MONTREAL WEST, QUE. Russell Hipwell Engines Ltd., Montreal West, Que.

J. R. Robillard, 676 Moffat Ave., Montreal, Que., CA Approx. **$150,000**, 1 story, 170x200 ft., concrete WAREHOUSE, on St. Patrick St., VILLE LA SALLE, QUE. H. R. MacMillan Sales (Quebec) Ltd., 5327 Drake St., Ville La Salle, Que. CD 10/2.

CONSTRUCTION REPORTS-Third Section

NEW ENGLAND

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. W.s., 100 Nashua St., Boston,
Northeastern Constr. Co., 46 Union Ave., Framingham, Mass., LB. $69,580, reconstruct Milbury St., Worcester.
Warner Bros., Inc., Sunderland, Mass., LB. $447,869, highway reconstr., Athol and Petersham. Bids Oct. 9. CD 9/26.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **George B. H. Macomber**, 19 Milk St., Boston, Mass., CA. Approx. $1,500,000. WAREHOUSE and range testing facilities at Springfield Armory, SPRINGFIELD, MASS. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Oct. 2. CD 10/9, under LB.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Chapman Valve Mfg. Co., 203 Hampshire St., Indian Orchard, Mass., LB. $879,116, Contr. 412, furnishing, testing, del. eight 48 in. and two 36 in. steel motor-operated conical plug valves, two 42 in., two 24 in. and one 12 in. c.i. motor-operated conical plug valves, one 14 in. c.i. manually-operated conical plug valve, one 20 in. c.i. motor-operated gate valve, pipe couplings and misc. valves for installation in the intake and outlet chambers of the Neversink Tunnel, The Downsville release water chamber and the outlet chamber of East Delaware Tunnel of the Delaware Aquaduct, NEW YORK, N. Y. Bd. Water Supply, 120 Wall St., New York 5, N. Y. Bids Oct. 9. CD 9/20.

▲ **DELAWARE**—State Hy. Dpt., Dover.
James Julian, Elsmere, Del., CA. $1,009,030, bridges, Records Pond, Contr. 1103; Nanticoke River Contr. 1104; and Nanticoke River (North River) Contr. 1105 Combined, Sussex Co. Bids Sept 26. CD 10/11, under LB.

SOUTH

SOON LETS CONTRACT—BUILDINGS

Miss., Jackson—HOSPITAL—Mississippi Baptist Hospital, 1190 N. State St., soon lets contract 80-bed hospital addn. Approx. $400,000. Spain & Biggers, Deposit Guaranty Bldg., archts. CD 7/25.

BUILDINGS

LOW BIDS AND CONTRACTS

W. L. Ragland & Son, Portsmouth, Va., CA. Approx. $325,000. CHURCH, PORTSMOUTH, VA. Port Norfolk Baptist Church, Portsmouth, Va.
Howard-Mitchell Constr. Co., 10 W. Cary St., Richmond, Va., CA. Approx. $350,000. OFFICE, RICHMOND, VA. A. T. Massey Coal Co., Inc., Travelers Bldg., Richmond, Va.
Thomas M. Zink, Inc., 821 N.W. 6 Ave., Fort Lauderdale, Fla., CA. $300,000 APARTMENT DEVELOPMENT, FORT LAUDERDALE, FLA. Joseph Ellul, c/o contractor.
† **Mills & Jones**, 260 4 Ave. S., St. Petersburg, Fla., LB. $347,495, elementary school for Personnel of MacDill Air Force Base, TAMPA, FLA. Region Housing & Home Finance Agency, Community Facilities Service, 114 Marietta St., Atlanta, Ga. CD 9/19.
Daniel Constr. Co. of Alabama, 822 7 Ave. S., Birmingham, Ala., LB, $878,030, HOSPITAL addn., BIRMINGHAM, ALA. Birmingham Baptist Assn., c/o Lawrence S. Whitten, archt.; Brown-Marx Bldg., Birmingham, Ala. Bids Oct. 9. CD 9/26.
Shelby Constr. Co., 4220 Paris Ave., New Orleans, La., LB, $929,680, construct, manage and finance 120 Wherry Act HOUSING UNITS at Redstone Arsenal, HUNTSVILLE, ALA. U. S. Eng., South Atlantic Div., Post Office Bldg., Savannah, Ga. Bids Oct. 10. CD 9/14.
▲ **Brown & Root, Inc.**, 4100 Clinton Dr., Houston, Tex., CA. Approx. $5,000,000, gas compression PLANT LAFAYETTE, LA. United Gas Pipeline Co., c/o contractor.

MIDDLE WEST

BIDS ASKED—BUILDINGS

▲ Mich., Detroit—HOUSING—B.A. 10/24—Detroit Housing Comm., 409 Griswold St., 160 brick dwelling units, Frederick Douglass Apartments, Area 3. $2,000,000. Harvey, Ellington & Day, 153 E. Elizabeth St., archts. CD 9/17.

▲ Ind., Richmond—POWER PLANT, etc.—B.A. 10/29—Bd. P. Wks., B. F. Harris, chn., City Hall, municipal power plant 30,000 kw turbogenerator, 28,000 sq. ft. surface condenser; 325,000 lb. P.Hr. steam generating plant, power transformer, metal clad switch gear, duplex switch board, battery and charging equip., outdoor circuit breakers, high voltage sub-stat.on, $1,000,000. Black & Veatch, 4706 Broadway, Kansas City, Mo., consult. engrs. CD 4/30.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

INDIANA—State Hy. Comn., State House Annex, Indianapolis, Zone 4.
Berns Constr. Co., 129 E. Market St., Indianapolis, Ind., CA. $838,310, est. $993,572, c.conc. 3.95 mi. State Rd. 41, Sullivan-Vigo Co. line to south of Youngston, Vigo Co. Bids Sept. 11, awarded Oct. 1. CD 9/14, under LB.
INDIANA—State Hy. Comn., State House Annex, Indianapolis, Zone 4.
Wm. D. Vogel Constr. Co., 3760 E. St. Clair St., Indianapolis, Zone 1, Ind., CA. $754,712, c.conc. wid'n., bit. resurf. and b.conc. on c.conc. pav.ng 11.514 mi. U. S. Rd. 52 from Hendricks-Marion Co. line south to north of 16 St., Indianapolis, Marion Co. Bids Sept. 20. CD 9/25, under LB.

WEST OF MISSISSIPPI

BUILDINGS

LOW BIDS AND CONTRACTS

LeBlanc, Inc., Box 351, Houston, Tex., CA. $587,407. SCHOOL bldg., LAMARQUE, TEX. Lamarque Independent School Dist., Lamarque, Tex. Bids Sept. 27, awarded Oct. 8. CD 10/9, under LB.

FAR WEST

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Cherf Bros. Constr. Co. and Sankay Contractors, Inc.**, Ephrata, Wash., CA. $1,297,351, est. $1,209,414, Schedule 1, earthwork, pipe lines, and structures for Area W-5 laterals, sublaterals, wasteways and drains, West Canal Laterals and West Canal Protective Works, Columbia Basin Proj., Spec. DC-3530, WASHINGTON. Bureau Reclamation, Dpt. Interior, Ephrata, Wash. Bids Sept. 20, awarded Oct. 2. CD 9/28, under LB.
WASHINGTON—State Hy. Dpt., Olympia,
P. L. Saddler, Wenatchee, Wash., LB, $548,970, clearing, grading, bit. 2.6 mi. Primary State Hy. 2, Chelan Co. Bids Oct. 9. CD 9/26.
▲† **Macco Corp., Morrison-Knudsen Co., Inc., and River Constr. Co.**, 14409 Paramount Bldg., Paramount, Calif., LB $5,873,781, est. $4,808,157 Isabella Dam and auxiliary dam across Hot Springs Valley, CALIFORNIA. U. S. Eng., Wright Bldg., Sacramento, Calif. Bids Oct. 9.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Brunzell Constr. Co.**, 3945 Higuera St., Culver City, Calif. LB, $1,099,383, Whaley Junior High SCHOOL, COMPTON, CALIF. Compton Union High School Dist., 601 Acacia St., Compton, Calif. Bids Oct. 9. CD 9/21.
▲ **The Harvey Nickols Co.**, 926 East Slauson St., Los Angeles, Calif., LB, $1,012,374, North Downey Junior High SCHOOL, DOWNEY, CALIF. Downey High School Dist., 8521 E. Firestone St., Downey, Calif. Bids Sept. 11. CD 8/27.
The McCarthy Co., 1138 S. Broadway, Los Angeles Calif., Owner Builds, $510,800, 65 frame, stucco DWELLINGS, GARDENA, CALIF. Hugh Gibbs, 441 E. First St., Long Beach, Calif., archts.

U. S. POSSESSIONS

BIDS ASKED—HEAVY CONSTRUCTION

† **Puerto Rico, Aquadilla**—DIESEL ENGINE GENERATOR—B.A. On or About 11/21—U. S. Eng., P.O. Box 4970, Jacksonville, Fla., diesel engine generator units, Ramey Air Force Base. Serial No. Eng. 08-123-52-63.

AMERICANS ABROAD

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Foster-Wheeler Corp.**, 165 Broadway, New York, N. Y., U. S. A., CA. Approx. $17,000,000. 16,000 bbl. REFINERY, DURBIN, UNION OF SOUTH AFRICA, Standard Vacuum Refining Co., 26 Broadway, New York, N. Y.

CANADA

BUILDINGS

LOW BIDS AND CONTRACTS

Southern Alberta Constr. Ltd., 241 9 St. North, Lethbridge, Alta., CA, $400,000, 4 story, rein.-con. nurses training SCHOOL, LETHBRIDGE, ALTA. St. Michael's General Hospital, Lethbridge, Alta. Meech, Mitchell & Assocs., McFarland Bldg., Lethbridge, Alta., archts. Awarded Sept. 27.
Baynes Manning, Ltd., 1010 Seymour St., Vancouver, B. C., LB, $637,167, Junior-Senior High SCHOOL, RICHMOND, B. C. School Dist. 38, 375 Sexsmith Rd., Lulu Island, Vancouver, B. C. Bids Oct. 1. CD 9/5.

OFFICIAL PROPOSALS

Bids: November 1, 1951

Traffic Interchange, Charles River Reservation

Commonwealth of Massachusetts, Metropolitan District Commission. Sealed bids or proposals will be received by the Metropolitan District Commission at its office, 20 Somerset Street, Boston, until 1 PM Thursday, November 1, 1951, and at that time and place will be publicly opened and read. The work to be done consists of constructing steel bridges, complete with roadways, for the traffic interchange near the Longfellow Bridge, Charles River Reservation, Boston. Charge for specification is $2.00, which amount is returnable only to bidders. Proposal guarantee shall consist of a certified check for $12,000.00 payable to the order of the Commonwealth of Massachusetts. Attention is called to the minimum rates of wages to be paid on the work as determined by the Commissioner of Labor and Industries under the provisions of Chapter 461 of the Acts of 1935. Complete information may be obtained from the office of the Commission. The right is reserved to reject any or all proposals.
By: William T. Morrissey, Commissioner.
October 5, 1951.

Bids: November 5, 1951

Refuse Incinerator Project Riverside Blvd. & Bay Drive

CITY OF LONG BEACH
New York

1. Sealed proposals for the construction of the herein described contracts for a Refuse Incinerator Plant Project at Riverside Blvd. & Bay Drive in the City of Long Beach, N. Y., will be received by the City Manager in his office in City Hall, Long Beach, N. Y., until 2:30 P.M. E.S.T., on Monday, November 5, 1951, and there publicly opened and read immediately thereafter.
2. The work will consist of providing all labor, materials, equipment and incidentals required for the construction of the following:

Contract I—General Construction; Refuse Incinerator Plant and Appurtenances.
Contract II—Heating, Ventilating and Vacuum Cleaning Equipment required for Refuse Incinerator Plant and Appurtenances.
Contract III—Plumbing Work required for Refuse Incinerator Plant and Appurtenances.
Contract IV—Electrical Work required for Refuse Incinerator Plant and Appurtenances.
Contract V—Chimney Stack required for Refuse Incinerator Plant.

3. Plans, Specifications, bidding and contract documents may be examined in the office of Kelly & Gruzen, Architects, 80 Fifth Avenue, New York 11, N. Y., and at the office of the City Engineer at City Hall, Long Beach, N. Y., and obtained from the latter upon deposit of the following amounts per set:

Contract I—$30 IV—$15
II—$15 V—$15
III—$15

Referenced Drawings and Specifications:
Contract—Refuse Incinerator Equipment—$20

Full refund will be made to actual bidders for return of one (1) set in good condition, within two weeks after closing date for receipt of bids; refund for all other sets, in good condition, within the same period, will be fifty percent (50%) of the deposit.
4. All proposals must be on the form contained in the specifications as furnished by the city.
5. All bids must be accompanied by a Certified Check or Acceptable Bidder's Bond in the amount of Ten (10%) percent of the amount of the Bid, made payable to the City Treasurer, City of Long Beach. Said checks will be returned to all, except the three (3) lowest bidders, not later than ten (10) days after opening of bids.
6. The successful bidder in each of the several contracts will be required to furnish a Performance Bond conditioned upon the faithful performance of the contract and upon the payment of all persons supplying labor and furnishing materials on the construction of the work.
7. No bidder may withdraw his bid within thirty (30) days after closing date for receipt of bids.
8. The City Council reserves the right to reject any or all bids and to waive any informality in the Bid, and to accept that proposal which in the judgment best serves the interests of the City.

CITY OF LONG BEACH, N. Y.
By: MAURICE J. FLEISCHMAN
City Manager
Dated: October 18, 1951

OFFICIAL PROPOSALS

APPEAR HERE EACH THURSDAY. PROPOSAL ADVERTISEMENTS ACCEPTED UP TO 10:30 A.M. FRIDAY FOR THE ISSUE DATED THE FOLLOWING THURSDAY

Bids: October 23, 1951

Clearing and Grubbing Neversink Reservoir

CONTRACT 387

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M., Eastern Standard Time, on Tuesday, October 23, 1951, for Contract 387, for clearing and grubbing the Neversink reservoir in preparation for the storage of water. The work will comprise the clearing of approximately 1,150 acres, the grubbing of about 475 acres, and required excavation, seeding and removal of excrementitious material, all as set forth in the specifications. The Neversink reservoir is located in the Town of Neversink, Sullivan county, New York.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of the City of New York, in the amount of thirty-five thousand dollars ($35,000.00), for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained at the office of the Chief Engineer, Room 1311, at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, RUFUS E. McGAHEN, EDWARD C. MAGUIRE, Commissioners, Board of Water Supply; RICHARD H. BURKE, Secretary.

Bids: November 15, 1951

FOUNDATIONS AND MISCELLANEOUS STRUCTURES
NORTHEAST STATION
FOR THE
DEPARTMENT OF WATER SUPPLY
CITY OF DETROIT, MICHIGAN

CONTRACT NO. NE-2

Sealed proposals for the construction of Foundations and Miscellaneous Structures for the Northeast Station, on a 64 acre site at 11000 East Eight Mile Road, will be received by the Board of Water Commissioners of the City of Detroit. Proposals shall be addressed to the Board of Water Commissioners, City of Detroit, Room 506 Water Board Building, 735 Randolph Street, Detroit 26, Michigan and shall be endorsed "Proposal for Contract No. NE-2". Proposals will be received until 10:00 A.M. Eastern Standard Time, November 15, 1951, at which time they will be opened and read aloud in the Board Room, Fifth Floor, Water Board Building, 735 Randolph Street, Detroit 26, Michigan.

Included in the work is the construction of reinforced concrete foundation slabs for the Filter Building, Wash Water Building, Weir Chamber, Switch House, Gate Well Chamber, the High Lift Plant and Raw Water By-pass Chamber (slabs and some walls), the Filtered Water Conduits, Filtered Water Junction Chamber No. 2, various drain lines with appurtenances and an electrical grounding system. The total plan area of the foundation slabs exceeds 141,000 square feet. The foundation slabs, generally, are to be constructed on cast-in-place concrete end-bearing piles, the base lengths of which are established as 104 linear feet with the total number required in excess of 4600. The foundation slabs and other structures and drains are to be made in excavations, included in this Contract, at depths of from 18 feet, approximately, to 29 feet, approximately, below existing site grade.

The Contract Documents, including the Notice to Bidders, the Forms of Proposal and Agreement, the Specifications, and the Contract Drawings, may be examined during business hours, at the office of the Department of Water Supply, Room 706 Water Board Building, Detroit, Michigan. The Contract Documents may be obtained by making a deposit of Twenty-Five Dollars ($25.00) per set, which sum will be refunded upon the return of the complete Contract Documents in good condition within thirty (30) days after the bid date, or if used in making a bona fide proposal.

Each proposal shall be accompanied by a certified check or a satisfactory bidder's bond in an amount not less than five per cent (5%) of the total lump sum price bid, drawn payable to the City of Detroit, Board of Water Commissioners, as security for the acceptance of the Contract.

No proposal may be withdrawn for at least sixty (60) days after the scheduled closing time for receipt of bids.

The Board of Water Commissioners reserves the right to waive any informality in any bid and to accept any bid, or to reject any or all bids, should it deem it to be in the best interests of the City of Detroit so to do.

CITY OF DETROIT
BOARD OF WATER COMMISSIONERS
R. K. Williams, President
Oscar Wagner, Vice President
George A. Shaffer
Alfred J. Simpson
L. G. Lenhardt, Superintendent,
General Manager and Chief Engineer
E. H. Bauer,
Acting Secretary

Bids: November 8, 1951

Additional Water Supply for Latham Water District, Colonie, New York

SECTION NO. 5

Sealed bids will be received by the Town Board of the Town of Colonie, New York, on the 8th day of November, 1951, until 7:30 P. M., Eastern Standard Time, at the Temporary Town Hall on the West side of the Loudon Road, between the Troy-Shaker Road and the Troy-Schenectady Road, for furnishing labor, materials and equipment and constructing a filter plant, aerator, pumping station and filtered water reservoir, together with furnishing miscellaneous material and equipment for the project for Additional Water Supply from Stony Creek.

The work has been divided into the following sections. Contractors may bid on any or all of the sections.

Section 5—General Construction on Filter Plant Building, Grading, Walks, Roads, Etc.—or
Section 5—Alternate—General Construction on Filter Plant Building, Foundations for Steel Clear Water Tank, Grading, Walks, Roads, Etc.
Section 5A—Clear Water Well or Filtered Water Storage
Section 5B—Flocculators—or
Section 5B—Alternate—Flocculator or Hydro-Treator
Section 5C—Outside Piping at Filter Plant —or
Section 5C—Alternate—Outside Piping at Filter Plant
Section 5D—Installation of Pumps, Motors and Engines—or
Section 5D—Alternate—Installation of Pumps, Motors and Engines
Section 5E—Aerator

The Information for Bidders, Form of Bid, Form of Contract, Plans, Specifications and Performance Bond may be examined at the office of the Town Clerk, Town Hall, Latham, New York, and at the office of Keis & Holroyd, 257 Broadway, Troy, New York. Copies thereof may be obtained at the office of Keis & Holroyd, or from the Town Clerk, upon payment of $25.00 for each set. Any bidder upon returning such set at the time of bidding and in good condition, will be refunded his payment, and any non-bidder upon so returning such set within 30 days of the date for receiving bids, will be refunded $20.00.

The Town Board of the Town of Colonie, New York, reserves the right to waive any informalities in or to reject any or all bids.

A certified check made payable to the order of the Town of Colonie, in the amount of Five Per Centum (5%) of the bid must be deposited by each bidder with his bid as a guarantee that in case the contract is awarded to him, that he will, within five (5) days thereafter, execute such contract and furnish a satisfactory performance bond. On failure to do so, he shall forfeit the deposit as liquidated damages and acceptance of the bid will be contingent upon the fulfillment of this requirement by the bidder.

The successful bidder will be required to furnish a performance bond satisfactory to the Town of Colonie, New York, in the amount of he contract and having as surety thereon, such surety company or companies as are acceptable to the Town of Colonie, New York.

No bidder may withdraw his bid within 30 days after the date set for the opening thereof. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof.

WILLIAM K. SANFORD, SUPERVISOR
Keis & Holroyd
Consulting Engineers
Troy, New York
Dated: October 8, 1951

Bids: November 7, 1951

Electric Lighting Equipment

CONTRACT 357

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A. M., Eastern Standard Time, on Wednesday, November 7, 1951, for Contract 357, for furnishing, delivering, installing and testing electric lighting equipment, for the West Branch and Kensico south effluent chambers and the Kensico comfort stations of the Delaware aqueduct, all as set forth in the specifications. The locations of the proposed work are in the Towns of Carmel, Putnam County, and Mount Pleasant, Westchester county, New York.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of the City of New York, in the amount of one thousand eight hundred dollars ($1,800.00), for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained at the office of the Chief Engineer, Room 1311, at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, RUFUS E. McGAHEN, EDWARD C. MAGUIRE, Commissioners, Board of Water Supply; RICHARD H. BURKE, Secretary.

(Continued on page 106)

Additional OFFICIAL PROPOSAL Advertisements on pages 104 and 106

OFFICIAL PROPOSALS

Bids: October 24, 1951

New York Highways Projects

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on Wednesday, October 24, 1951 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract is indicated below. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 2				
		L. KETCHUM, Dist. Engr., 109 No. Genesee St., Utica, N. Y.				
Hamilton	S. H. 51-10	Speculator-Indian Lake, Pt. 2A	6 19	Bit. Treated Graded Gravel	$28,000 Plans $15	$509,000
		DISTRICT No. 3				
		WM. ROBINSON, Dist.-Engr., Weigh Lock Bldg. Syracuse, N. Y.				
Seneca & Cayuga	O. T. 51-6	Ontario Thruway (Tyre-Montezuma)	4 15	Grading & Drainage	$110,000 Plans $15	$1,961,000
		DISTRICT No. 5				
		C. R. WATERS, Dist. Engr., 65 Court St., Buffalo, N. Y.				
Erie	FAOT51-8 FAST51-7	N. Y. State Thruway-Ontario Section (Harlem Ave.-William St.) Henry Street; Parker Street; Dingens Street Proj. No. TI-1071(8)	1 82	2 Course Cem. Conc. Pavt. 2 at 37' Wide = 0.90 Mi. Bit. Mac. Ty. 1 = 0.81 Mi. Misc. Work = 0.11 Mi. Hy. Sep. Alpha I-Beam 213.7" Sp. Alpha Royalty = $260.00	$45,000 Plans $15	$780,000
		DISTRICT No. 8				
		J. S. BIXBY, Dist. Engr., Pleasant Valley Rd., Poughkeepsie, N. Y.				
Columbia	RC 51-77	Copake Iron Works-Bashbish Falls, S. H. 1790	1 45	Cable Guide Railing	$700 Plans $10	$13,000
		DISTRICT No. 9				
		F. W. DONOVAN, Dist. Engr., 71 Frederick St., Binghamton, N. Y.				
Delaware	FARC51-70	Margaretville-Halcottsville, S. H. 5384 Fleischmanns-Margaretville, S. H. 239 Proj. No. F659(4)	4 04	9" Cem. Conc. Pavt. 24'-40' Wide = 4.00 Mi. Misc. Work = 0.04 Mi.	$70,000 Plans $25	$1,212,000
		DISTRICT No. 10				
		J. J. DARCY, Dist. Engr., Montauk Hwy. at Little E. Neck Rd., Babylon, L. I., N. Y.				
Nassau	N. E. 51-1	Nassau Expressway-Seagirt Boulevard Interchange Contract 1	0 01	Pile Foundation	$7,000 Plans $10	$130,000
Nassau	FAS SH51-8 FARC 51-69	Wantagh-Central Park, Pt. 2 & Pt. 3 Proj. S212(2)	2 06	9" Unreinf. Cem. Conc. Pavt. 2 at 25' Wide = 1.75 Mi. Misc. Work = 0.31 Mi.	$50,000 Plans $15	$603,000

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder. Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
Supt. of Public Works

OFFICIAL PROPOSALS

November 27, 1951

Yonge Street Subway Contract S-6

Sealed tenders endorsed "Tender for Yonge Street Subway, Contract S-6" will be received by the Toronto Transportation Commission at its office, 35 Yonge Street, Toronto, until twelve o'clock Noon, Eastern Standard Time, on Tuesday November 27th, 1951.

The work for which such tenders are invited consists of building the subway parallel to and immediately west of Yonge Street from Imperial Street bridge to Eglinton Avenue Station of "Open Cut" and "Cut and Cover" construction combined, also terminal buildings complete with finish, as described in more detail in Requirements for Tendering and Instructions to Tenderers.

All tenders must be made upon blank forms of tender as furnished by the Toronto Transportation Commission and included in the Contract Documents, and shall be made in accordance with the provisions contained in said documents.

The successful Tenderer will be required to furnish, execute and deliver to the Commission a performance bond satisfactory to the Commission in the amount and within the time set out in the Contract Documents.

The Contract Documents, including plans and specifications, will be available to Tenderers on Thursday, October 11th at the Rapid Transit Office of the Toronto Transportation Commission, 14 Front Street East, Toronto. Copies of the Contract Documents may be obtained by depositing One Hunderd Dollars ($100.00) with the Commission for each set of documents. The amount of the deposit will be refunded upon return of the plans and documents in good condition within ten (10) calendar days after the opening of tenders.

Each tender must be accompanied by cash or a certified cheque on a chartered bank doing business in the City of Toronto, in the amount of two and one-half per cent (2½%) of the Contract price.

The Toronto Transportation Commission reserves the right to reject any or all tenders and to disregard any informalities in the tenders or tendering.

No tender may be withdrawn, after the scheduled closing time for receipt of tenders for at least forty-five (45) calendar days.

WM. C. McBRIEN,
CHAIRMAN,
TORONTO TRANSPORTATION COMMISSION

Toronto, Ontario.
October 1951.

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3564) will be received by Bureau of Reclamation, Casper, Wyoming, until November 28, 1951, and then publicly opened for furnishing labor and materials and performing all work for the construction of Alcova Power Plant and appurtenant works, Kendrick Project, Wyoming. The work is situated immediately downstream from Alcova Dam, which is approximately 30 miles southwest of Casper, Wyoming. Principal items are approximately: excavation, 62,000 cu. yds.; furnishing and handling cement, 21,000 bbls.; furnishing and placing reinforcement bars, 2,230,000 lbs.; concrete, 14,730 cu. yds.; furnishing and erecting structural steel, 786,000 lbs.; furnishing and installing metalwork, 1,071,000 lbs.; and other work. Time allowed for completion will be 960 days. For particulars, address Bureau of Reclamation, Casper, Wyoming; or Building 53, Denver Federal Center, Denver, Colorado.

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-3558) will be received by the Bureau of Reclamation, Denver, Colorado, until November 6, 1951, and then publicly opened for furnishing 3 oil pressure cabinet actuator-type governors with pumping equipment, for regulating speed of 74,000 horsepower, 163.6 rpm turbines for Central Valley Project, California. Delivery is desired within 720 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver, Colorado.

Bids: November 14, 1951

Southeast Treatment Works Packer Avenue and Swanson Street

PHILADELPHIA, PENNA.
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING,
SURVEYS AND ZONING

Sealed Proposals will be received at Room 903 City Hall Annex, until 12.00 o'clock noon, Wednesday, November 14, 1951, and opened at that time in Room 903 City Hall Annex, Philadelphia, Penna., for

General Construction Work and Furnishing and Installing Mechanical Equipment and Piping for Primary Settling Tanks and Appurtenant Work
Contract No. SD 108 SE

The work consists of construction of primary settling tanks, with approximate total dimensions of 521' long, 333' wide and 13'6" deep. Structure will be built on piles and contract includes necessary mechanical collectors, piping and other appurtenances.

Proposal forms and specifications may be obtained in Room 1101 City Hall Annex. Blue prints of plans may be purchased at bidder's expense, directly from the Keystone Blue Paper Co., 51 North 13th Street, Philadelphia 7, Penna.

No bids will be received unless bidder is qualified by the Director of Public Works. The questionnaire with all questions fully answered must be filed with the Director of Public Works at least one week prior to the date of opening bids.

Each bid must be accompanied by security in form and amount as set forth in proposal form.

THOMAS BUCKLEY, Director

Bids: October 29, 1951

Contract Superstructure Bascule Span 63rd Street Bridge

Miami Beach, Florida
October 6, 1951

Sealed proposals will be received at the above office until 10:30 A.M. on the 29th day of October, 1951, for furnishing materials, fabricating, shop and field painting, delivering, erecting and installing the superstructure of the bascule span of the 63rd Street Bridge, complete with all structural, mechanical and electrical installations and equipment and with all adjustments as may be necessary to place the span in first-class operating condition.

All work is to be done in accordance with the Plans, Definitions, General Provisions, Special Provisions, Specifications, and Proposal and Contract of the City of Miami Beach.

A certified check or bid bond in the amount of five percent of the total amount of the Proposal, and made payable to the City Clerk must accompany each proposal.

Plans and Specifications are on file, and may be examined at this office, and may be secured on application to this office by making a deposit of fifteen dollars ($15.00), which deposit will be returned provided said Plans and Specifications are returned in good order.

The right is reserved to reject any or all bids.

CITY COUNCIL CITY OF
MIAMI BEACH
(Signed) C. W. Tomlinson
City Clerk

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
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Information sent without obligation. Write today.

WILSON *Engineering Corp.*
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REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

ASST. CITY Engineer Building Inspector, $3900 to $4290 per annum, vacation, sick leave. Opportunity for young man. Write City Manager, Iowa City, Iowa.

CONSTRUCTION SUPERINTENDENT. Permanent position. Must be top grade building construction management man with extensive industrial and monumental projects experience. Nationally prominent construction company established over 50 years offers good opportunity to right man. Our Personnel know of this ad. A complete experience record is desired. Address Box P-2079, Engineering News-Record.

CONSTRUCTION ENGINEER: To take charge of entire construction program of Consulting Engineering firm. Work involves mainly water, sewer and sewage treatment projects aggregating about $1,000,000 a year. Permanent position with view to eventual interest in firm. Salary open. Location upstate New York. P-2230, Engineering News-Record.

CONTRACTOR'S ENGINEER, Wanted. Experienced in quantity surveying on all types of General Building Construction for General Contractor's Office located in Central Pennsylvania. Civil Engineering graduate preferred but not essential. Advise education, experience and salary expected. P-2003, Engineering News-Record.

DETAILER AND Checker—Experienced in making and checking shop details for steel fabrication plant. All types of steel construction. State experience, references, and rate expected. Savannah Machine and Foundry Company, P. O. Box 590, Savannah, Georgia.

ENGINEERS WITH Experience in preparation of plans for sewage and water treatment projects or related experience. Location Northwestern Ohio. P-2070, Engineering News-Record.

EXPERIENCED CONSTRUCTION Engineer for Bergen County Building Contractor of Schools. Reply Box P-2138, Engineering News-Record.

FIELD ENGINEER. Permanent position. Desired for nationally prominent construction company. Man desired must have had heavy experience on layout work for foundations and building interiors. When replying, forward complete experience record. Address Box P-2080, Engineering News-Record.

HEATING AND Refrigeration Engineer wanted. Must be capable of handling mechanical layout, design, and supervision of such installation. Locations of offices served are Racine, Wisconsin; Waukegan, Illinois; Lake Forest, Illinois; and Evanston, Illinois. Pay commensurate with ability. The firm is one of the largest plumbing, heating and refrigeration companies between Chicago and Milwaukee, and is expanding its services yearly. Stiles & Horne, Inc., 648 North Western Ave., Lake Forest, Illinois.

NEW JERSEY Crushed stone, sand gravel and bituminous concrete producer requires assistant in Engineering Dep't. Splendid opportunity for advancement. Write stating qualifications. P-2208, Engineering News-Record.

SENIOR MECHANICAL Engineer. At least (3) years post college experience. Electro-Mechanical servo unit design, precision gear trains, etc. Established company, New York City. Write ENR 1731, 221 W. 41st Street, NY 18.

ESTABLISHED 57 YEARS
POSITIONS IN

Engineering	Appraisals
Architecture	Chemistry
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THE ENGINEERING AGENCY INC.
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POSITIONS VACANT

TOPOGRAPHER—MUST be U. S. Citizen. Experienced in large scale plane table mapping. Location Metropolitan Long Island. P-2131, Engineering News-Record.

WANTED—CIVIL Engineer graduate, some reinforced concrete structural design experience preferred, by long established engineering promotional and educational organization to be representative in the Metropolitan New York Area. Age 25 to 40. Give resume of education, engineering experience, and salary requirements in reply. P-2137, Engineering News-Record.

WANTED IMMEDIATELY: Superintendent or assistant superintendent thoroughly experienced to supervise large draglines, dozers, drilling equipment and dynamiting on large canal and levee project. Must have the push for guaranteed yardage output monthly. Permanent position if qualified. Write to Box Number P-2061, Engineering News-Record.

PART TIME WORK AVAILABLE

SEMI-RETIRED Engineer wanted by distributing firm, part time quantity work. Heavy concrete experience desirable. Rural Northeast location. PTWA-2219, Engineering News-Record.

EMPLOYMENT SERVICE

SALARIED PERSONNEL, $3,000-$25,000. This confidential service established 1920, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, 241 Orange St., New Haven, Conn.

POSITIONS WANTED

BUILDING CONST. Executive. 30 years experience. Thoroughly understand Estimating, Sub-letting, Purchasing and office work. Desires position of responsibility. Box PW-2218, Engineering News-Record, 330 W. 42 St., NYC.

CIVIL ENGINEERING Graduate, 27, married, 2½ yrs. experience detailing reinforced concrete, structural steel, some design, desires position in structural or materials research. PW-2212, Engineering News-Record.

ENGINEER REGISTERED, Grad. Age 48, 25 years experience structural design and construction on sewage treatment, water filtration plant and power plant work. Also cost estimating and piping and equipment experience. Wishes to locate in Detroit area. PW-2040, Engineering News-Record.

PROJECT MANAGER or Engineer. Thirty-five years experience in design and construction of power plants, steel mills, sugar mills and heavy industrials. Successful record in contract negotiations, client relations and management of engineering and construction organizations. Now employed but available shortly for a position of long duration and responsibility at top salary. PW-2115, Engineering News-Record, 330 W. 42 St., N.Y.C.

PROJECT MANAGER or General Supt. 25 years experience in Bridge, Tunnel and Heavy Construction; both estimating and performance. Interested in salary and bonus proposition. Have following for work in Middle Atlantic States. PW-2171, Engineering News-Record.

Available
PROJECT MANAGER-ENGINEER

Registered Graduate Civil Engineer, 45, single, good health. Able to associate and deal with top level your and your clients' organization. Liquidating own construction business because of restrictions. Can handle work from inception to completion. Know costs and estimating. Experienced in design and construction refineries, pipe lines (oil and gas), steel and concrete structures, sewage disposal plants, sanitary and storm sewers. Also construction highways, asphalt work, housing projects and land development. Have performed this type work past 18 years.
Prefer South, Southeast or Southwest, will consider foreign service. Salary open for negotiations, prefer salary and bonus based on ability to produce. Have been drawing $12,000 yearly from own business.

PW-2205, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

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We need men with experience as:

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Electrical Designers
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Checkers

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LICENSED SURVEYOR. Twenty years experience preliminary and location-Highways-Railroads-Track design. PW-2006, Engineering News-Record.

MECHANICAL INSTALLATION Specialist and General Construction superintendent widely experienced on Hydro-Electric, Chemical, Mining and General industrial plants. U. S. citizen now employed in Canada seeking employment in U.S.A. PW-2076, Engineering News-Record.

REGISTERED ENGINEER available, age 49. Thoroughly experienced in supervision of design and construction of bridges and industrial buildings. Present salary $9600. PW-2170, Engineering News-Record.

SECRETARY—FEMALE, having 9 years heavy construction and building experience. Competent, reliable and capable of responsibility. PW-2196, Engineering News-Record.

SUPERINTENDENT. 25 Years diversified heavy construction experience — bridges, dams, disposal plants, pumping stations, concrete structures, sewer and water systems, heavy excavation rock and soil, water front work, etc. Good organizer, know men and equipment, familiar with labor and material cost and distribution. Good background. Location immaterial. PW-2216, Engineering News-Record.

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THE INDUSTRIAL PROJECT
ESTIMATORS GUIDE (1951)

1951 unit prices, Lab. & Matl. Bldgs. & Eqpmt. Special piping data—cross country—process—water —gas—brine—fire lines—used 3 yrs. on atomic projects. This small booklet helps take-off and ordering of materials—gives coverages. Money back if not pleased in 10 days. $2.00.

W. A. THOMAS, Consulting Engineer, 2742 Phila Ave., Pittsburgh, 16, Pa.

Additional Positions Vacant Ads on page 108

We Need

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P-2041, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

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P-2153, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

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P-1783, Engineering News-Record
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Experienced in plant maintenance. Technical graduate preferred. Experience in chemical plants beneficial. Regular full-time positions in central and eastern U. S. locations. First letter must give full details of experience, age, salary expected, and when available for work. Write **Box ENR, 1515, 221 W. 41 St., N. Y. 18.**

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P-2136, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

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1 **Caterpillar Tractor,** model D7 with LeTourneau PCU and Angledozer.
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1 **Buffalo-Springfield 10 Ton 3 Wheel Roller.** Gas Engine, model VM-30.
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FS-2226, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

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FS-2188, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

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1 DIAMOND steel bin 15 cu. yd. capacity with 1 "A" frame support for customer's 24" Barber Greene Conveyor.
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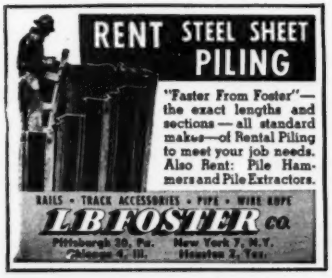

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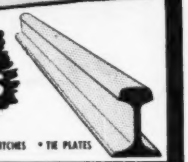

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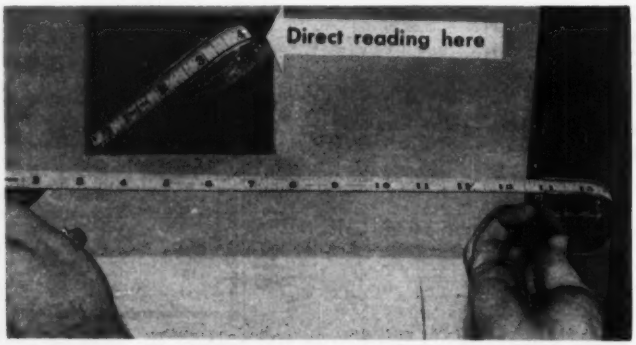
NEW PRODUCTS

Direct drive feature of new transit mixer

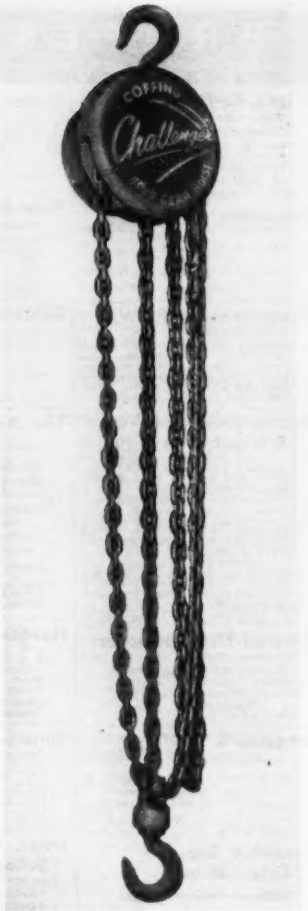
Outstanding feature on this new transit mixer is the Transo Direct Drive which eliminates sprockets, drive chains, and ring gears, with results, according to the manufacturer, in a saving of from 800 to 1600 lb dead weight. A planetary type transmission eliminates shock loading, assures smooth starting and discharging, and holds equipment wear to a minimum. All clutches run in an oil bath and are spring-loaded for self-adjustment.

The Transomixer has two starting and discharge speeds, and the built-in water pump has a separate spring-loaded clutch. It has been built to the specifications of the Truck Mixer Manufacturers' Bureau, is twelve to seventeen inches shorter than other mixers of the same capacity, and is made with both 3½ and 4½ cu yd mixers. Another interesting development is the elimination of all seal wear between the hopper and mixing drum. This is the result of a permanently leak-proof seal, which makes maintenance and replacement formerly required on this part unnecessary. The Transmission and Gear Co, Dearborn, Michigan.



Steel rule "sees" in the dark

"Accurate measurement even in the dark" is the claim Master Rule Co makes for its multi-purpose streamline steel measuring tape. By butting the right angle tip of this tape against one wall of a space to be measured, then extending the tape until the straight-sided case is flush against an opposite wall, a flick of the locking lever positively retains the measurement. The case may then be moved into the light and measurement read directly at the top of the case. It lists graduations on both sides and has a decimal equivalent chart. It may be used for inside or outside measurement, height or depth gage, outside caliper measure, or flush for layout work. Available in 6-, 8- and 10-ft lengths with either etched blue steel or easily read black-on-white tapes. Master Rule Manufacturing Company, Middletown, N. Y.

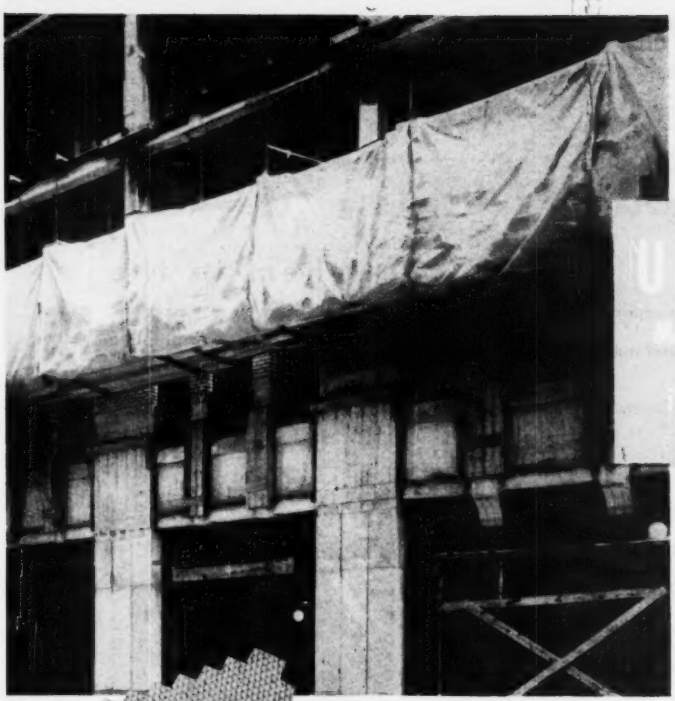


Spur-gear hoist extremely light

Now in production in ½- and 1-ton capacities, this new spur-gear hoist, including standard length of high strength coil chain for an 8-ft lift, weighs only 39½ lb. The back plate is laminated to give extra rigidity for supporting the hoist mechanism. This plate and all other load-holding parts are of high-strength steel that will hold five times the rated capacity of the hoist, according to the manufacturer. To further check and confirm its strength, every Challenger hoist is tested by the manufacturer at 100% overload as it comes off the production line at the factory.

According to the manufacturer, a survey conducted among users of all makes of hoists revealed that the most universally expressed unfulfilled need was for easier servicing. This unit is

(Continued on page 119)



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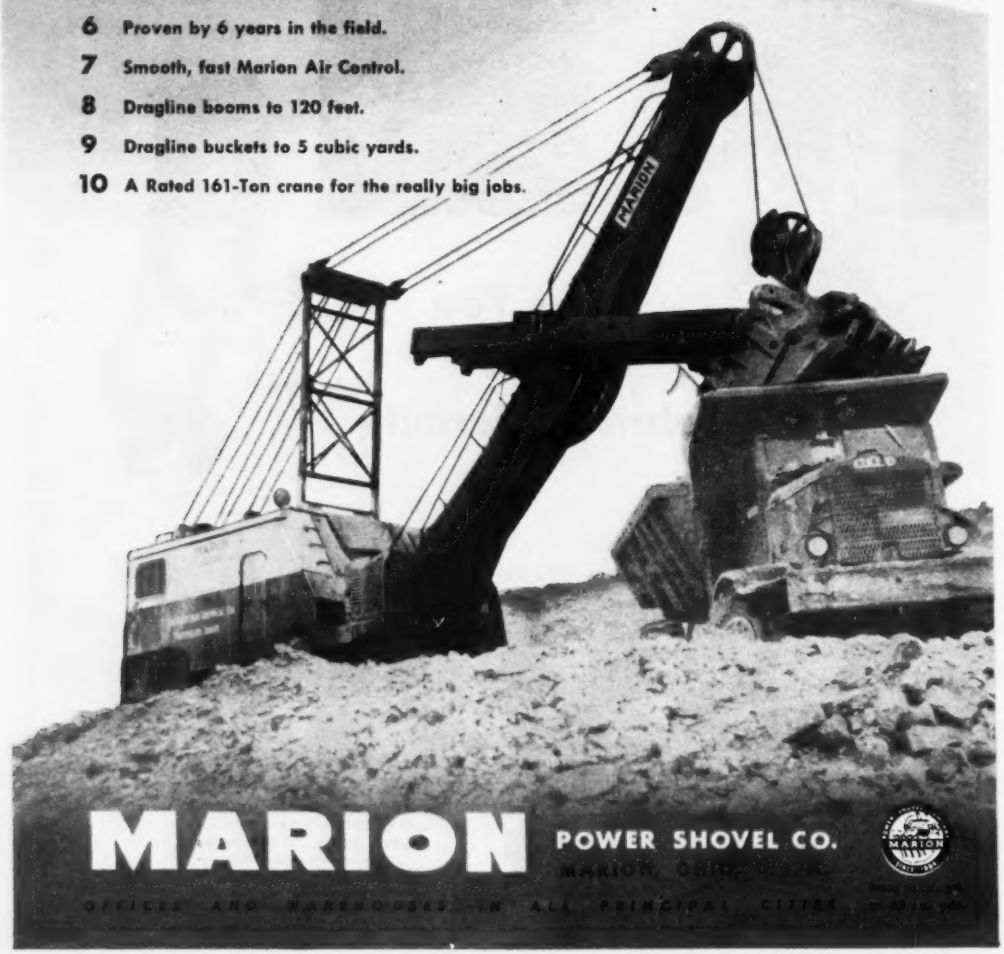

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The Ezy earth anchor fills a long-felt need for a unique, speedy and easily installed tool for anchoring guy lines, making dead-man installations, and providing piling and piering for various types of construction work. Installations may be permanent or temporary and offer unusual load resistance to tension and compression, according to the manufacturer.

As shown in the photo, the anchor consists of a pointed steel body equipped with a wide-flange screw which pulls itself into and locks itself to the earth. About 15 turns are required for average installation, the operation taking approximately 3 to 5 minutes. They may be backed out quickly and re-used as needed. Soil is

(Continued on next page)

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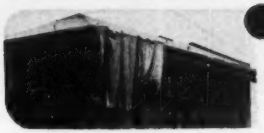

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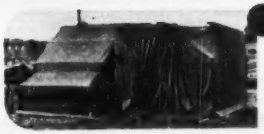

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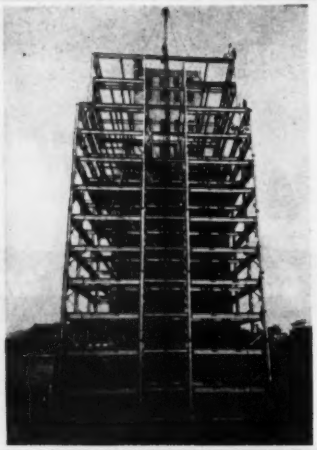

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not displaced, but compacted tightly around the screw blade as the anchor descends. For extreme pulls, two or more units may be installed in line and tied together. In soft, boggy land or fill ground, barrel extensions permit desired depth of penetration. Reinforcing sleeves may also be telescoped over the anchor body to increase strength as needed. Body sizes are 2 x 66 in., or 2½ x 54 in. Telescoping barrels are 3 to 5 in. in dia by ½-in. steps. Lengths run from 35 to 31 in., respectively. VAN DYKE INDUSTRIES, 3625 CAHUENGA BOULEVARD, LOS ANGELES 28, CALIFORNIA.

Chemical treatment rustproofs metal parts

Rubbing and sliding surfaces of precision parts such as thrust washers, pump pistons, gears, valve roller pins, stems and guides can now get two-fold protection with a chemical treatment known as Rustshield 2. It's a phosphating compound which changes steel and iron surfaces to rustproof, highly-absorbent, non-metallic areas.

Close tolerances are unaffected and the vastly increased surface area of a Rustshielded surface is an ideal base for the retention of lubricating oils, says the manufacturer. These oil-retentive qualities are due to the hills and valleys formed during the process. Finishes of this type are said to be preferred to oxide coatings where resistance to abrasion is desired, as well as resistance to alkali cleaning, corrosion and heat. OCTAGON PROCESS INC., 15 BANK STREET, STATEN ISLAND 1, NEW YORK.

Five new models to Towmotor line

Three of Towmotor Corporation's five new fork lift trucks replace three formerly produced, and they feature solid or cushion tires as well as shorter wheelbase for maneuverability. The other two models feature pneumatic tires on all wheels, bringing to three the number so equipped by the company. They are:

Model	Wheelbase	Capacity at Load Center	
480-P *	48 in.	4,000#	24 in.
390	39	3,000	15
400-P *	40	2,000	24
420	42	4,000	15
460	46	4,000	24

* Pneumatic tires throughout

Write for full information to TOWMOTOR CORPORATION, 1226E. 152ND STREET, CLEVELAND 10, OHIO.

(Continued on page 123)

Shovel-Loaded TOURNAPULLS earn winter profits for Bill Crawford on underpass excavations

Summer and winter alike, Contractor Bill Crawford of Buffalo, New York, keeps working and earning with his 2 electric-control C Tournapulls. Last summer, for example, his high-speed scraper rigs handled airport, highway, and land-leveling projects . . . last winter, the Tournapulls paid off as high-speed hauling units. Shown here is a particularly rugged winter assignment — eliminating a series of grade crossings along Central Avenue in Lancaster — where the 2 open-topped "C's", loaded by a 1½-yard shovel, hauled 135,000 yds. from short, deep cuts.

Hauls 1 mile through traffic

Most of the time, Crawford reports, the Tournapulls worked this job under very difficult conditions — heavy snow, rain, freeze-and-thaw temperatures of 4° to 59° above . . . handling all-clay material that was always wet, heavy, and sticky . . . hauling a mile one-way over narrow, heavily-traveled city streets and across 2 railroad tracks . . . dumping in an unusually soft field. Despite these tough conditions, each 13.5-yd. Tournapull averaged 30 loads every 8-hour day on the 2-mile round trip, according to contractor's own load-count records.

Here's a report on Scraper operation:

On one of the typical scraper jobs — leveling 50,000 yds. of clay for a Buffalo shopping center — each Tournapull delivered 12 loads of 9½ pay yards per hour on 2000' cycles. That's 228 pay yards hourly for the 2 Tournapulls.

In all, the 2 "C's" have each worked 2000 hours with a mechanical efficiency of 90%. Both rigs drove under their own power between jobs . . . completing a typical 10-mile trip through heavy city traffic in 1 hour . . . another 15-mile drive in 45 minutes.

See for yourself what these job-proved, electric-control Tournapulls can do to increase year-around production and cut costs on your work. Ask your LeTourneau Distributor for job-proved facts and figures on *NEW* 15-yd. (18-ton) "C's" TODAY.

Hauling a mile along Lancaster city streets, Tournapull averaged 11 m.p.h. despite icy pavement and traffic delays.

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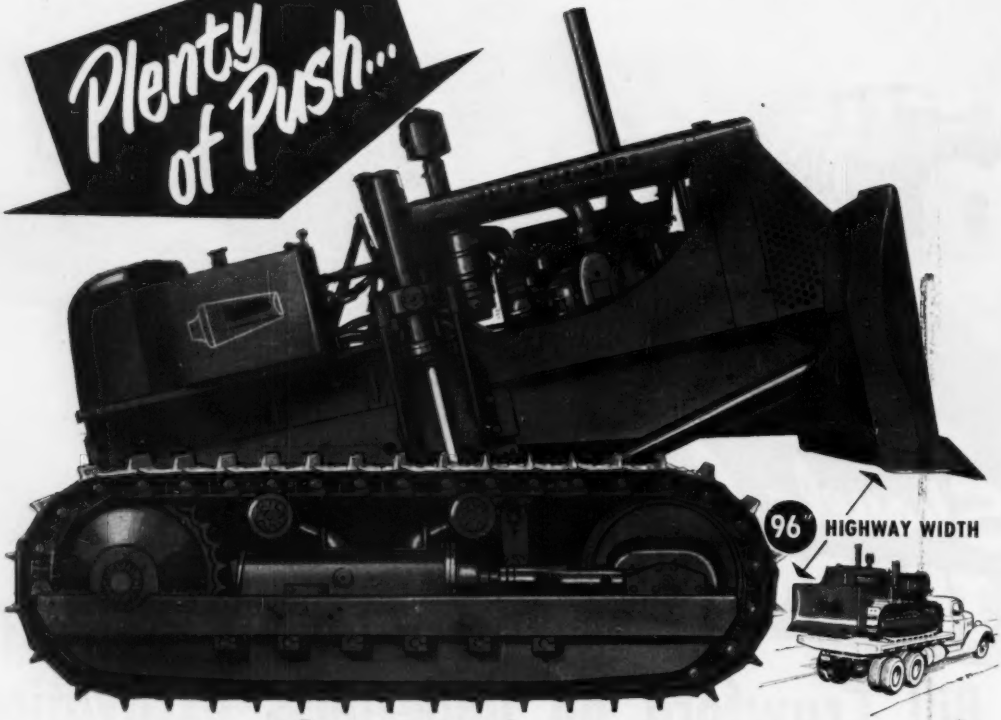

...but NO Push Beams!

Push beams are eliminated *entirely* in the revolutionary new *highway wide* Baker 9-X 'Dozer. Bulldozer and engine frame form an integral unit. Blade responds instantly through double-acting cylinders, which raise and lower tractor-dozer unit. And tying it all together, making it work, is an entirely new design in *stabilizer bars* and *horizontal bearings.*

Here are some of the advantages for many jobs:

HIGHWAY WIDE: Width only eight feet—96 inches—exactly the same as standard highway trailers. Haul the Baker 9-X anywhere, anytime, *day or night,* with NO SPECIAL PERMIT.

PLENTY OF PUSH: Mounted right on an Allis-Chalmers HD-9, the moldboard is 6 inches higher than standard blades to provide almost same blade area, for plenty of push, plenty of capacity—with the famous Baker "move-more-dirt" moldboard curve.

IN FAST, OUT FAST: Steeper angle of approach on the blade because of close coupling. You can get in fast, out fast,

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New products . . .

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A new non-slip floor covering, called Fera-Mat, provides a firm walking surface composed of durable mineral granules resin-bonded to a heavy-duty weather-proof cloth backing. It's available in cleats measuring 6 x 24 in. or in 6-in. rolls, 86 ft long. Rolls are available only in black, but cleats are made in green and red as well.

A protective underside liner is peeled off at the time of installation, exposing a pressure-sensitive adhesive. It's recommended for steps, ramps, platforms, factory floors, walkways, catwalks, fire escapes and the like. AMERICAN ABRASIVE METALS COMPANY, 460 COIT STREET, IRVINGTON, NEW JERSEY.

New pump can handle plastics and thick slurries

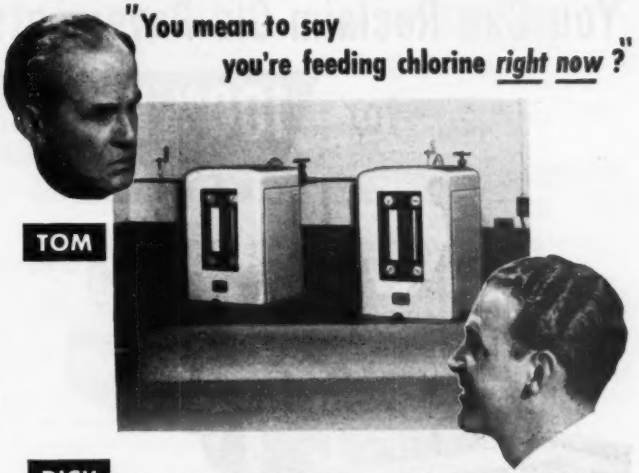
A new type pump, designed to handle plastic materials and thick slurries has been designed by a Scotchman. The prototype pump handles roughly five tons of material per hour, but current work aims at doubling that capacity by utilizing a 15-gal. centrifugal pump in place of the 50-gal. unit which supplies the hydraulic power. Alternatively, the Meader pump can be operated by steam, hydraulic power or compressed air, according to its inventor.

It consists of a chute or hopper, a cutting cylinder, which is alternately withdrawn and inserted into the base of a hopper, and a ram assembly in which the smaller ram expels the material from the cutting cylinder and forces it into a discharge pipe.

An hydraulic cylinder at one side of the hopper bottom permits passage of pressure water and exhaust water. The sequence of movement is: withdrawal of cutting cylinder and ram assembly from base of hopper, cutting cylinder forced into the material, smaller ram forced through cutting cylinder, expelling material through discharge valve and into discharge pipe.

There is a complete absence of external glands; any material being handled by the pump would be contained completely within the pump and its discharge pipe. Therefore, no matter how dirty the material being pumped, the operation can be carried out under maximum cleanliness of working conditions. Trials of the

(Continued on next page)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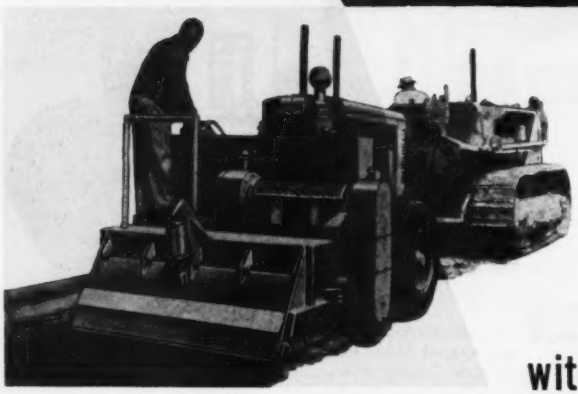

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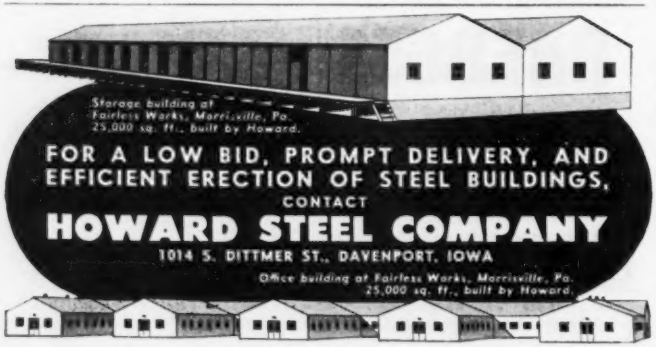
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New products . . .

pump have shown that clay of a fairly stiff consistency can be pumped without difficulty through long lengths of discharge piping, illustrating that the pump can be used as a form of conveyor for any material capable of being extruded at normal temperatures. Successful tests have been run with various materials from liquid state to that of a stiff plastic, including mud, residue from processes, sewage, cement slurries, unset concrete, paste and ceramic compositions. All materials which are in a plastic state at normal temperature can be pumped, according to the manufacturer: HENRY BALFOUR & COMPANY, LTD., LEVEN, FIFE, SCOTLAND.

New Product Briefs

An **outdoor spotlight** which provides 100,000 candlepower with only a 300-watt rating has been announced by **Stonco Electric Products Co.**, Elizabeth, New Jersey. According to the manufacturer, the new unit has been designed to concentrate its output in a long-throw, oval-shaped, narrow floodlighting beam. Up to five units may be mounted in a cluster light assembly.

New and improved **heat-absorbing plate glass** is now being put on the market by **Libbey-Owens-Ford** and made at their **Rossford, Ohio** plant in various sizes up to a maximum of 100 by 150 inches. The ¼-in. thick polished glass permits only 42 to 50 percent of the sun's total radiation to pass through, making it ideal as glazing for shop show windows which display fruits, candy, flowers, vegetables, etc., the manufacturer states. By reducing the transfer of sunheat, it should also be highly considered in connection with air-conditioning equipment.

Single twist bits are available in nine sizes ranging from 8/16 to 16/16 from the **Midway Tool Company Inc., Melvin, Ohio.** Manufactured with hand brace shanks or square shanks for bar handles, they also come furnished with spur or spurless heads and with or without screw tips.

Wallex is an oxy-acetylene hardfacing rod with excellent abrasion resistance and good resistance to impact and corrosion. Made by **Wall Colmonoy Corporation, 19345 John R Street, Detroit 3, Michigan,** it can be obtained in three sizes: 3/16, 1/4 and 5/16 in. diameter, all 8 to 12 in. long.

MANUFACTURERS' PUBLICATIONS

Nickel and high-nickel alloy pipe—A new technical booklet on the fabrication and design of nickel and high-nickel alloy pipe and tubing is now available, designated as Technical Bulletin T-17. It contains 27 pages illustrated throughout by drawings and photographs. Other information includes tables on mechanical and physical properties, ASME code requirements, recommended welding procedures, and so on. TECHNICAL SERVICE SECTION, RESEARCH DIVISION, INTERNATIONAL NICKEL CO., INC., 67 WALL STREET, NEW YORK 5, N. Y.

Abrasive-belt machines—This is a factual description of abrasive-belt machines and also a handy manual on the subject. Information on each machine is comprehensive, including a basic description of the machine, its operation, and the scope of its uses.

Included in the 28-page booklet are chapters on wet belt grinders, dry belt grinders, centerless, contour grinding and polishing machines, backstand idlers, and bench and utility grinders. THE PORTER-CABLE MACHINE COMPANY, SYRACUSE 8, N. Y.

Steel swimming pool—Entitled "So You're Going to Build a Pool," this manual explains all of the factors involved in planning municipal and community pools, pools for hotels, clubs, and private institutions, and private pools. The 12-page booklet also discusses advantages of steel swimming pools and gives full design, construction and erection details of the Koven large and standard pools. Each of these design features is clearly illustrated with appropriate drawings or sketches. KOVEN STEEL SWIMMING POOLS, INC., 155 OGDEN AVENUE, JERSEY CITY, N. J.

Large squirrel-cage induction motors—is the title of a 4-page, two-color brochure put out by Allis-Chalmers Co. The book explains end shields on induction motors, which are designed to meet a growing demand for increased protection. Fully drip-proof construction, plus all-around mechanical protection, is standard on these models. Many mechanical modifications are available, such as double shaft extensions or three-bearing construction. The brochure also contains a large cut-away view explaining in detail the various construction features. ALLIS-CHALMERS COMPANY, MILWAUKEE 1, WISCONSIN.

(Continued on next page)

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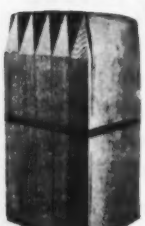

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Manufacturers Publications . . .

Manganese and alloys steels—Maximum service at lowest cost for power shovel parts, conveyor and elevator chains, crusher parts and pulverizer parts are all explained in this handy 12-page booklet. A short, concise history of the element manganese is included, and, in addition, there is a complete description of the company's "soaking" process to which the steel is subjected. Ask for Bulletin No. 151. KENSINGTON STEEL COMPANY, 505 KENSINGTON AVENUE, CHICAGO 28, ILLINOIS.

Air cylinders—Twenty-eight different models of air cylinders, each in nine bore diameters, are illustrated and described in this new Catalog No. 55. The three-color book lists every standard air cylinder offered in the industry. Working drawings and specifications are furnished for each model and size cylinder, both standard and cushion types, single and double end rods, internal and external threads. Information relative to a particular model is all shown on one page, facilitating easier layout of circuits by any engineer. Cylinder mountings described in the catalog are Rabbet, Foot, Trunnion, Center Line, Blind End Flange, Rod End Flange, and Clevis. These cylinders are recommended for air pressures of 150 psi maximum, and oil pressure of 300 psi maximum. Write to RIVET LATHE & GRINDER, INC., BRIGHTON 35, BOSTON, MASS.

Resistance welding of nickel and high nickel alloys—This new technical booklet has been issued by the Development and Research Division of International Nickel Co., Inc. Designated as Technical Bulletin T-33, it contains 32 pages illustrated throughout with drawings and photographs. It also presents tables on mechanical properties, chemical compositions, recommended conditions for welding, and other information. Write to TECHNICAL SERVICE SECTION, DEVELOPMENT AND RESEARCH DIVISION, INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK 5, N. Y.

American revolver cranes—This new catalog features American revolver cranes in industrial use at ports and industrial plants throughout the world. It shows many specialized applications for these giants in industrial construction, and marine materials handling. Rated lifting capacities of the five standard models are listed, as well as short job stories from

various sections of the world. Catalog No. 400-3 can be obtained from AMERICAN HOIST & DERRICK COMPANY, 63 SOUTH ROBERT STREET, ST. PAUL 1, MINN.

Stabilization of gravel roads—Who can be sued for an automobile accident caused by loose gravel? This and other subjects concerning unstabilized gravel roads are discussed in a new 8-page bulletin which treats the cost of stabilization vs. the savings possible in lower maintenance and in the elimination of gravel losses. An interesting feature of the bulletin shows a method by which $150 to $500 of gravel per mile can be salvaged from shoulders and ditches where it has been chipped by traffic. SEAMAN MOTORS, INC., 305 NORTH 25TH STREET, MILWAUKEE, WIS.

Core drill equipment—All the various types and sizes of core drill equipment in general use, for which standards have now been written in whole or in part, are included in a new Standards Bulletin No. 1 by the Diamond Core Drill Manufacturers Association. The publication clearly shows all parts, with cutaway drawings and nominal dimensions. These standards provide for interchangability of equipment and components and great care has been taken to leave the way open for individual ingenuity and invention in the future.

The bulletin represents collected knowledge, experience and thought of the 16 member companies of the Association, following the work of its technical committee. Work is being continued, and as further standards are approved from time to time revisions of this bulletin will be issued. It is now obtainable at a cost of 50 cents from DIAMOND CORE DRILL MANUFACTURERS ASSOCIATION, 122 EAST 42ND STREET, NEW YORK 17, N. Y.

Controlled volume pumps—This bulletin should be of interest to industrial plants whose operations call for pumping a controlled volume of liquid in any amount from 50 gpm to as little as 3 milliliters per hours. The bulletin gives complete details on controlled volume pumping and includes data required for selecting these pumps for specific applications. Uses are given in the chemical, textile, petroleum, food and beverage, water treatment, pulp and paper industries. Four pages of color charts show relative corrosion resistance of materials of construction to over 170 chemicals. Ask for Bulletin No. 151 from the MILTON ROY COMPANY, 1300 EAST MERMAID LANE, PHILADELPHIA 18, PENNSYLVANIA.

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Power drought in Pacific Northwest

A power shortage in the Pacific Northwest seems as preposterous as the sale of sand in the Sahara.

Bonneville and Grand Coulee dams, ranking among the biggest construction jobs completed in the last decade, made this Washington-Oregon-northern Idaho area embarrassingly rich in power just a few short years ago. That's why some Northwest citizens were shocked at prospects of a brown-out for power conservation to be imposed in mid-October. These same people were even more shocked when Defense Mobilizer Charles E. Wilson started talking about moving portions of the Northwest electro-chemical industries to other parts of the U. S. (ENR Oct. 4, p. 24).

Just how all this came about makes an interesting story—one somewhat paralleling the recent New York city water shortage. Involved are politicians, bureaucrats, fishing interests, defense projects, power company officials and, most immediately, rain—or lack of it.

• **Starts with drought**—Just as in the New York case, a severe drought served to bring the Northwest power shortage to public attention. For four months this summer there was little or no rain in the normally wet Northwest area. Ordinary citizens thought it was the most wonderful summer they ever had. But power men worried as reservoir levels dropped and river flows decreased.

In mid-September some interruptible power (i.e. permitted by the contract to be cut off or interrupted) was cut from aluminum potlines in Vancouver and Spokane, Wash. Then, the Defense Electric Power Administration ordered a curtailment of non-essential uses to be effective Oct. 1. This brown-out was postponed as result of heavy rains late in September.

• **Foresight needed**—Actually the power shortage had its roots many years before the drought that dramatized it.

It wasn't exactly lack of foresighted planning that caused the deficiency. It was more the failure to realize that demand for the cheap Northwest hydroelectric power would continue to grow at a rapid rate at the end of World War II.

The industrial giants that gobbled up so much of the power during the war stayed in business. Aluminum producers found new markets for their refined metal, and the Atomic Energy Commission's Hanford Works continued operations on an even larger scale. It is estimated that growth of the area has required, and will continue to require for some time, an additional 350,000 kw of installed hydroelectric potential each year.

For a while this demand was met by installation of new generators at Grand Coulee and minor additions on the part of private companies, municipal power systems, and public utilities districts. But it was soon obvious that this wasn't to be enough. So in 1947 and '48 all power interests in the Pacific Northwest threw their weight behind getting appropriations for new large federal projects.

McNary Dam, started by the Corps of Engineers in 1947, was one of the first of these to get underway. However, this project is so complex that first power was scheduled for 1954. Expenditures of additional sums for a "junior" cofferdam have stepped this up to late 1953.

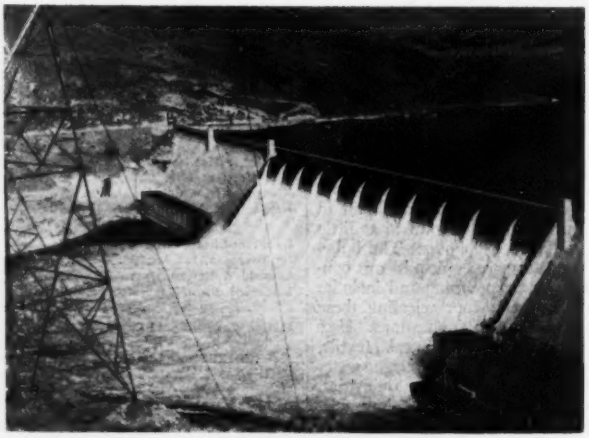
Some blame Congressional appropriation policy for stretching these federal jobs out longer than necessary. But main factor causing the power shortage as cited above is growth beyond the dreams of most power men.

• **Help from Hungry Horse**—The Bureau of Reclamation jumped into the fray in 1948 with Hungry Horse Dam that will develop its first power late in 1952. Actually Hungry Horse is located in western Montana outside the critical area. But power from its four 71,250-kw generators will mostly go west. And, perhaps even more important than that, its reservoir will firm up many downstream power plants.

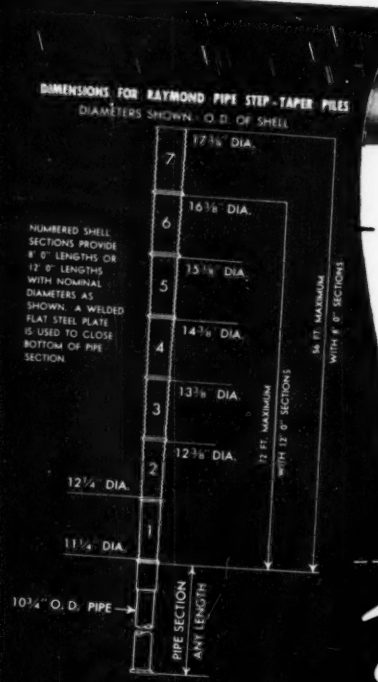
Other projects, both private and public, have been delayed by commercial and sports fishermen who charge that the dams are ruining the salmon industry in the Pacific Northwest. Specifically, these interests have blocked Pelton Dam, a Deschutes River project of the Portland General Electric Co., and Ice Harbor Dam, a Corps of Engineers project on the Snake River. Fish ladders and other protective works will add an extra $100 million to the cost of Columbia and Snake River projects.

With the advent of the war in Korea, some privately financed power facilities (namely, Yale and Cabinet Gorge) have become economical. Feasibility of Cabinet Gorge was also helped by up-stream storage at Hungry Horse.

Underway in this area is hydroelectric construction to develop over 3,000,000-kw capacity.



IN BETTER TIMES—Grand Coulee's spillway looked like this, but now it is dry, and all water goes through the 18 generators of the 1,874,000-kw power plant. The reservoir will be drastically drawn down to provide power this winter.



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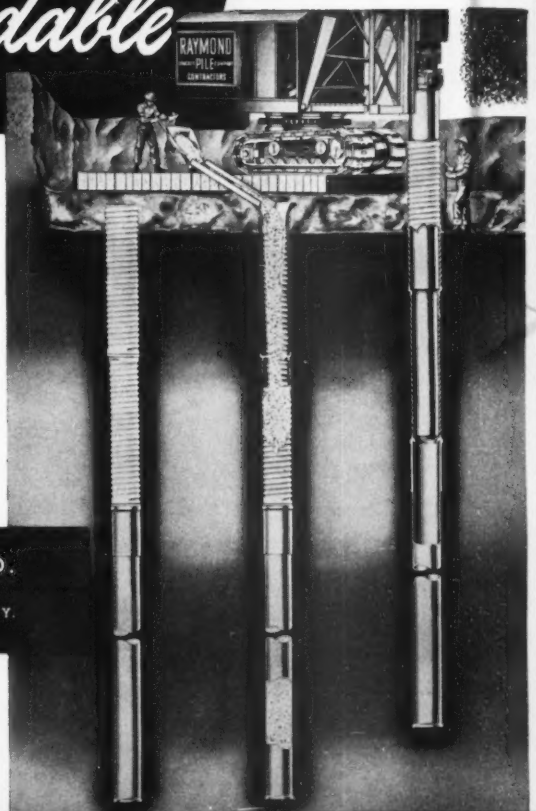
Raymond installs every type of pile: cast-in-place concrete, precast concrete, steel pipe, wood and H-beam. Raymond operations include underpinning, borings and soil investigations, waterfront construction and harbor and river improvements, shipbuilding facilities, also cement-mortar lining of water, oil, gas and chemical pipelines, 4" to 144" diameters, by Centriline Corporation, a Raymond subsidiary.

3. PIPE STEP-TAPER PILES

Deep and Dependable

At the right, the pipe step-taper pile is being driven with the rigid steel mandrel. In the center the shell and pipe are being filled with concrete after having been driven to satisfactory resistance and inspected. At the left is a completed pipe step-taper pile.



Raymond Pipe Step-Taper Piles are composed of an upper section of Step-Taper Shell Pile and a lower section of closed-end steel pipe pile. These piles are generally used to penetrate thick beds of soft soil to reach hard bottom at depths as great as 150 feet or more. The pipe step-taper pile is a most dependable pile available for reaching hard ground at great depths.

Raymond's methods result in efficiencies and substantial savings that are well worth investigating. Consult our engineers for more detailed information.

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